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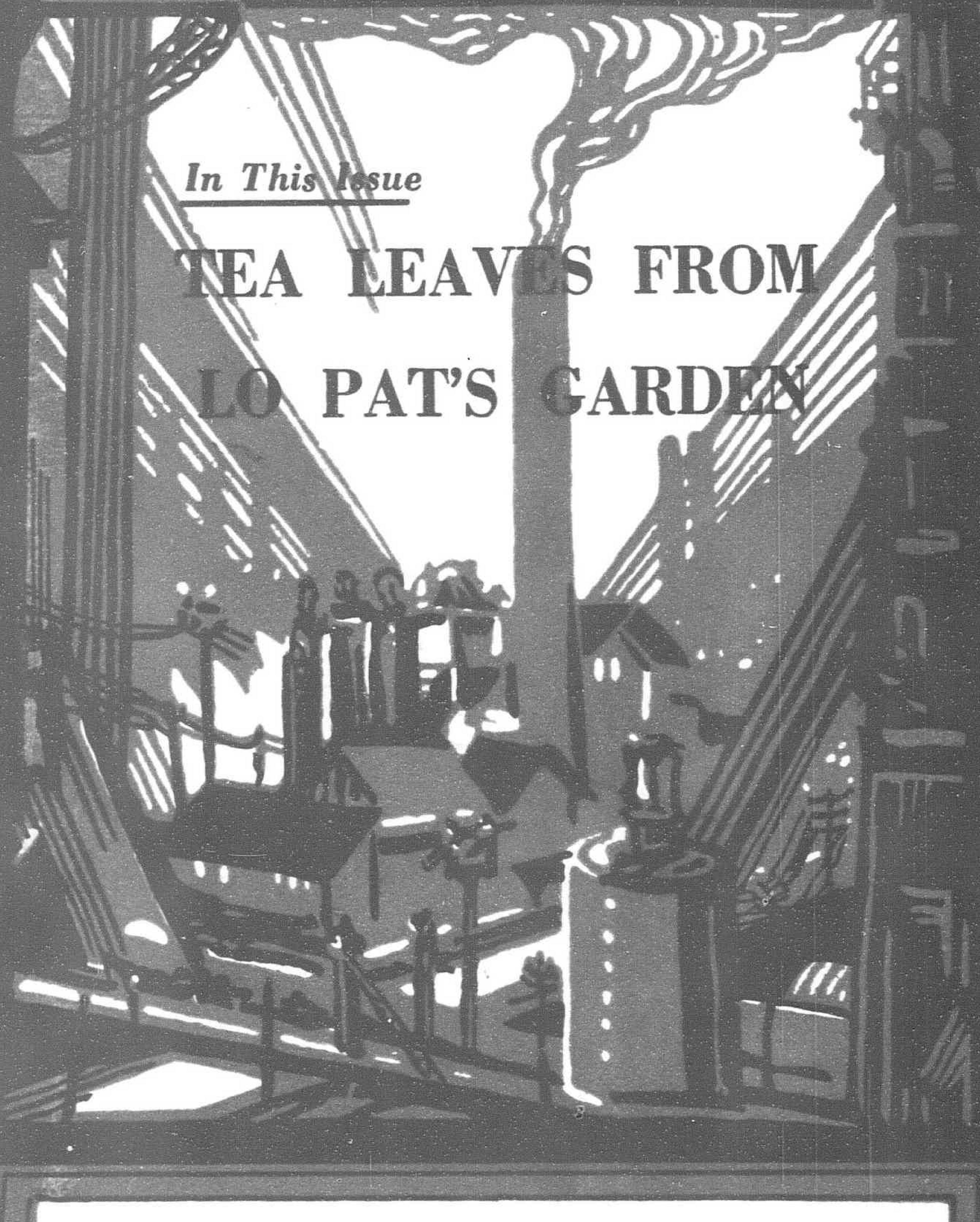

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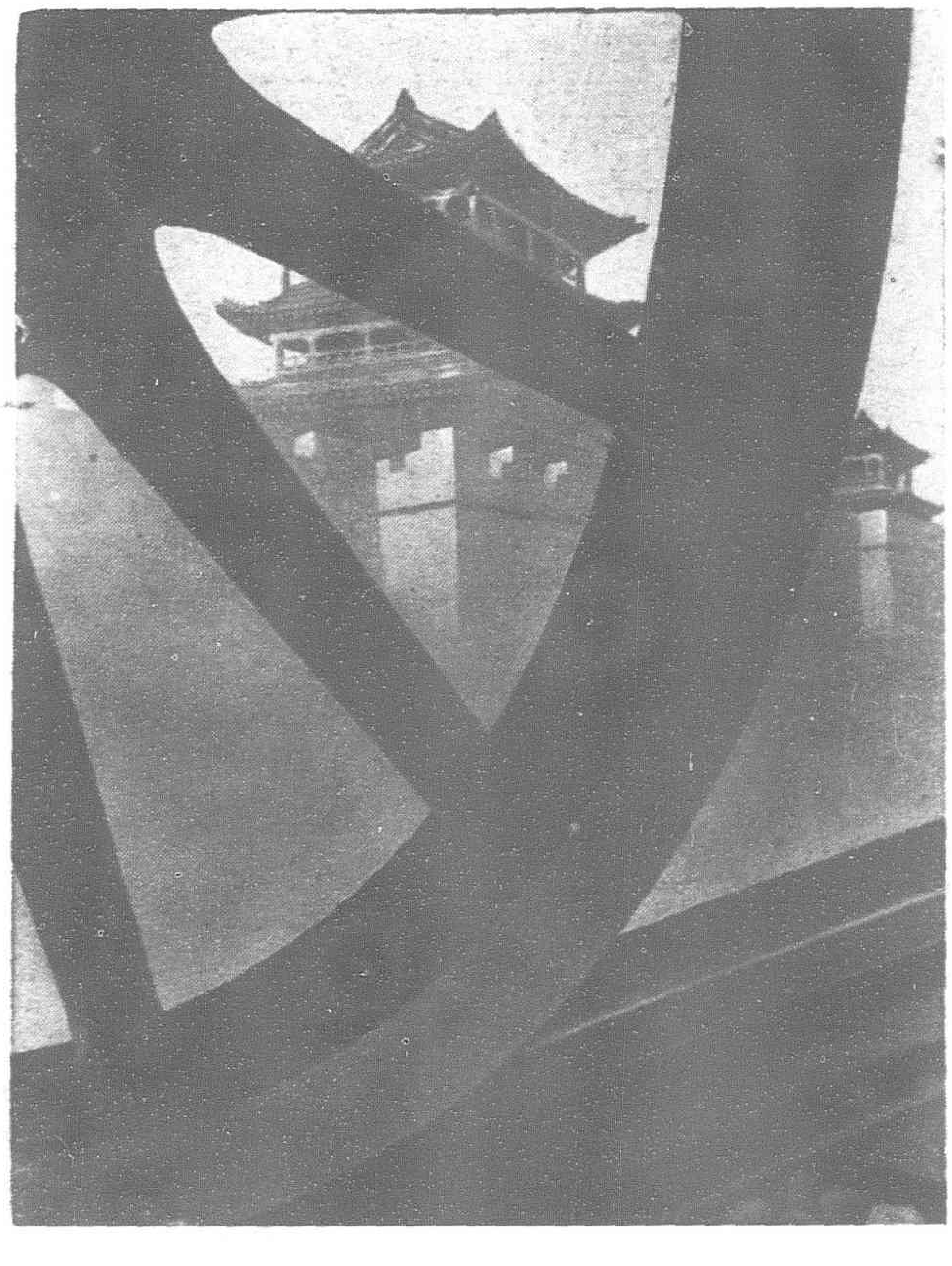

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The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XXXVII SHANGHAI, JUNE, 1941 No. 6

FAR EASTERN CROSS-CURRENTS

Scripps-Howard newspapers throughout the United States editorially declared that President Roosevelt in his fireside speech on May 27 proved that sundry Senatorial and Cabinet "spokesman" were wrong when the President dashed "cold water" on rumors that the United States would convoy ships to Britain.

The editorial added that "Pepperish" threats to bomb Tokyo—referring to a statement by Senator Claude Pepper that the United States should bomb and reduce Tokyo to a shambles—"were less understood but no less dangerous," than the convoy question.

The editorial claimed that "in too many circles the impression is cultivated that Washington has slammed the door on negotiations with Japan and that war is inevitable.

"Here again, it is essential that the American and Japanese people keep their eyes on President Roosevelt and Mr. Cordell Hull (Secretary of State) instead of the face-making, war-dancing 'representatives' who so often misrepresent them."

The newspaper editorial said the President pointedly avoided any verbal attack on Japan in his fireside chat, claiming the President "was withstanding the pressure of war-makers in America and Japan. As a realist he knows that neither nation wants war or can profit from war.

"There is no reason to believe the President will fail to co-operate with any Japanese plan for peace in the Pacific," the editorial concluded.

Political quarters expressed their belief that statements by Mr. Cordell Hull, Secretary of State, and Mr. Yosuke Matsuoka, Japanese Foreign Minister, had dashed for the present any prospects for negotiations to improve relations between Japan and the United States.

The two statements seemed to leave relations exactly where they have been for many months—in a state of tense antagonism, although there was no immediate prospect of an open conflict. As a result, there was a renewed impression among some experts that relations more than likely would become worse before any improvement could be noted.

Earlier, unofficial reports stated that an improvement in relations might be expected after President Roosevelt avoided any unfriendly reference to Japan in his fireside speech. Congressional quarters deduced from this that President Roosevelt had moderated his policy toward Japan.

Within a few hours, however, Mr. Hull asserted that there had been no change in relations with Japan. Mr. Matsuoka's statement that Japan's foreign policy was bound up with the tripartite alliance appeared to observers to have been designed to match the statement by Mr. Hull.

Observers simultaneously noted that President Roosevelt, in his speech, declared that United States aid to China would be increased, which in effect would not be conducive to amicable relations between Washington and Tokyo.

Japan also may be faced by the decision of whether open, armed American aid to Britain would be interpreted as an "attack" upon Germany under the tripartite pact.

One school of thought felt that Japan could escape the necessity of fulfilling her obligations under the pact on the grounds that United States aid to Britain did not constitute a direct attack on Germany. If the Nazis then should shoot at U.S. ships, Japan would be freed of her pledges to the Axis since Germany would not actually have been attacked by the United States.

Nomura Is Hopeful

Admiral Kichisaburo Nomura, Japanese Ambassador to the United States, in his first public address since arrival in Washington on February 11, expressed the belief that despite difficulties facing Japanese-American relations there is "no reason to lose faith in the ability to work out a peaceful solution."

The Japanese Ambassador's address was made at a dinner given at the Waldorf-Astoria Hotel under the auspices of the Japanese Chamber of Commerce, and attended by more than 800 leading Americans and Japanese including Admiral William Pratt, former United States Chief of Naval Operations, and Mr. John Zellers, Chairman of the New York Board of Trade.

Admiral Nomura declared, "No one can pretend that Japanese-American relations are free from difficult problems at the present time. All of you are aware of these problems and there is no need for me to describe them.

"Yet it is still my firm conviction that the Pacific must remain peaceful, and **the conflagration now raging elsewhere must not spread to the Pacific. It is quite clear for both our countries that nothing can be gained, and there is everything to lose by armed conflict.**

"Between America and Japan, the way of peace is the only way.

"It is the way that we have followed in all the 86 years of our intercourse. The traditions of peace, co-operation and mutual respect which we have built up since the Navy of Commodore Perry are a valuable asset, particularly at a time like this.

"Difficulties and disagreements have cropped up time and again in the past between the two countries, but they have been only the exceptions that prove the rule. Some issues had been serious, but the statesmen of both countries supported by their peoples, always have found a way to steer clear of danger.

"Now, even if our present problems overshadow those of the past, there is no reason to lose faith in the ability to work out a peaceful solution."

Opinion in Japan

Political observers in Tokyo expressed the opinion that the recent visit by Mr. Joseph C. Grew, United States Ambassador, to Mr. Yosuke Matsuoka, Japanese Foreign Minister, might have constituted a forerunner to active negotiations aimed at an improvement in the strained relations between Japan and the United States.

Significance was attached to the conversations because they closely followed the speech in New York by Admiral Kichisaburo Nomura, Japanese Ambassador to Washington, who declared that Japan has not abandoned hopes for adjustment of difficulties. It was also considered significant that the meeting followed the pointedly - significant remarks of Mr. Cordell Hull, when the U.S. Secretary of State replied to charges that the United States was continuing to supply large quantities of materials to Japan and Russia.

This reply was interpreted in America, and many quarters in Japan agreed, as a defense of the Washington Administration's present policy of refraining from full application of economic restrictions against Japan in order not to antagonize Japan.

It was generally believed that as a result of Nazi Germany's victory in Crete —which was regarded as placing the Nazis

in an advantageous position in the Eastern Mediterranean for an attack on Egypt and the Suez Canal, while possibly simultaneously splitting the British Mediterranean Fleet—the United States must intensify its assistance to Britain, possibly by resorting to drastic measures, such as convoys, which might precipitate war with Germany.

Because of fear that the Axis would demand that Japan live up to its obligations under the Tripartite Pact in such an event, it was believed that the United States was anxious to improve relations with Japan.

In that connection, significance was attached to the report that Mr. John G. Winant, U.S. Ambassador to Britain, had brought to Washington a British request that the United States enter the war. This has been denied in Washington, however.

It was believed that Mr. Grew possibly sounded out Mr. Matsuoka on the Brenner Pass meeting in which Chancellor Adolf Hitler and Premier Benito Mussolini were reported to have discussed some means of coping with the anticipated intensified U.S. assistance to Britain as intimated by President Roosevelt in his fireside speech.

That Japan desires improvement in relations with the United States was typically indicated by an editorial in the *Japan Times and Advertiser* which declared that Admiral Nomura's speech in which he said that, notwithstanding information he had gathered since his arrival in America, there was no reason to lose faith in a peaceful solution of the Pacific situation showed that "if good will is displayed on both sides, especially if the United States withholds such acts as might force Japan to fulfil its obligations, the desired end can be achieved.

"Presented with the frank and hopeful words of Admiral Nomura, the people of America now will be armed with persuasive instruments to secure the co-operation of their Government with that of Japan," the newspaper concluded.

The utra-nationalistic *Kokumin Shimbun*, which sometimes represents the viewpoint of the military, said that in the event the United States really desired readjustment of Japanese-American relations Washington should abandon its anti-Japan-actions "of an enemy character, including undesirable assistance to Chungking."

The *Kokumin* argued that the Tripartite alliance was not aimed against the United States but rather was negotiated to prevent American entry into the European war. The newspaper hinted that a Japanese-American rapprochement could be reconciled with the Tripartite Pact, but said that this must be carefully explained to the Japanese nation.

No Further Moves

Officials of the Export Control Administration, Washington, confirmed that the Government at present was not contemplating any change in present regulations governing exports of vital defense materials to Japan, including petroleum.

The revelation was made after President Roosevelt, at his press conference said the United States was not at present contemplating any additional curb on exports of oil to Japan aside from those already in existence under the export control program.

Mr. Roosevelt's statement was made shortly before reliable sources claimed that President Roosevelt in his "fireside chat" purposely did not mention Japan among the totalitarian powers because he did not want to offend those Japanese who might materially alter their nation's policy by their own efforts, such as Japanese business groups. It was the first intimation that the Administration feels there exists a substantial hope of alienating the Japanese from the Axis.

Odds Against War

Mr. Walter Duranty, veteran correspondent for the North American Newspaper Alliance, wrote on May 27 from Honolulu after a visit to Japan that odds were against Japanese entrance into the war despite her pledges under the tripartite alliance, but said he believed Japan would fight if her oil supplies were cut off.

Mr. Duranty claimed there was considerable doubt among important Japanese leaders whether joining the Axis was a wise move, but other leaders had urged such a move, hoping to share in the looting of the British Empire as well as scare or neutralize Soviet Russia and thus diminish Soviet assistance to China.

Mr. Duranty claimed the Japanese were nervous and pessimistic over the fleeing from the Reich of Herr Rudolf Hess, No. 3 Nazi leader, and wrote that if Japan was so worried over such an issue the nation was in no state to fight the United States, Britain, Australia and the Netherlands East Indies.

The Nana correspondent *en route* to the States after a tour of the Far East, said foreign observers in that area believed Japan was feeling at present "greater strain from the China war than was outwardly apparent—economically, agriculturally, financially and even in loss of manpower, with three or four deaths from disease for every soldier killed in battle."

Chinese Displeased

Reports that President Roosevelt deliberately refrained from mentioning Japan in his fireside chat in the hope of alienating Japan from the Axis are causing considerable anxiety among Chinese circles in Chungking.

Commenting on the subject the influential Chinese daily, the *Ta Kung Pao* declared: "If the United States actually believes that Japanese industrialists will be able to overthrow the domination of militarists, resulting in a deterioration of Japan's relations with the Axis, then Washington has been misled by Japanese propaganda.

"When Japan joined the Axis it was clear that the United States was the imaginary objective of the tripartite pact. When the United States is on the brink of participation in the European war, and when Japan is preparing to fulfil her obligations to Germany and Italy under the provisions of the pact, it is dangerous for the United States to dream of the loss of power on the part of Japanese militarists or Japan's alienating from the Axis.

"The slightest wrong move on the part of the United States will expose her to the Japanese menace."

In order to offset the Chinese public's anxiety the official Central News Agency has released a statement declaring that the fireside chat revealed President Roosevelt's deep concern in Far Eastern Developments, while the President's assurance of continued and increased assistance to China increased China's confidence and *moral*.

The statement further added that President Roosevelt's declaration upholding the doctrine of freedom of the seas was not restricted to the Atlantic but all parts of the world.

While reports from Washington are arousing speculation whether the United States is planning "to make a deal with Japan in the Far East," some Chinese quarters still maintain that, because of a conflict of interests and also Japan's continued jeopardy of American interests in the Far East, it is practically unthinkable that the United States and Japan can reach any agreement regarding the Far Eastern situation. With continued assistance from the United States, it is pointed out here, China can hold out against Japanese attacks, thereby preventing Japan from giving any effective support to the Axis.

Changed Policy

Both the *New York Times* and the *New York Herald Tribune* published reports from Washington stating that according to Congressional leaders who attended the White House conference prior to the fireside chat, President Roosevelt purposely omitted reterence to Japan because he had decided to adopt a new policy of conciliation in order to release a large part of the United States Navy from the Pacific.

Basis of Policy

The Tripartite Pact signed by Japan, Italy and Germany, continues to form the basis of Japan's foreign policy, the Foreign Minister, Mr. Yosuke Matsuoka declared to the press in referring to rumors in some American newspapers that Japan was becoming indifferent toward the three-power pact.

"There is no question whatever as to the fact that the Tripartite Pact constitutes the immutable basis of Japan's foreign policy," Mr. Matsuoka declared.

He added that, "I could hardly believe the American authorities entertain such a misunderstanding."

Describing reports in American papers as "absurd and a misconception" the Foreign Minister asserted that "if such erroneous views were current in America, they could be ascribed to misleading information spread wilfully."

Asserting that "it would not be entirely useless" to clarify Japan's position in this connection, the Foreign Minister said that "Japan's fundamental policy has for a long time been firmly established and has undergone no change whatsoever.

"Since the conclusion of the Tripartite Pact last September 27, Japan's foreign policy has consistently been conducted with this pact as its pivot. This should be clear to all from statements on various occasions made by Prince Konoye and myself as well as the subsequent development of Japan's policy.

"There has been, of course, not the slightest deflection from this course of policy. It is therefore absolutely impossible to imagine that Japan should fail in the slightest degree to carry out faithfully her obligations under the Tripartite Pact."

In conclusion, Mr. Matsuoka declared that "as frequently had been affirmed, Japan's policy toward the South Seas is peaceful. Should, however, any untoward international developments render the execution of such a policy impossible, it is a possibility that Japan may have to reconsider her attitude in the light of the changed situation."

Informed quarters interpreted this latter part of the Foreign Minister's statement as a direct warning to the Netherlands East Indies in view of the current deadlock in economic talks between Japan and the Netherlands East Indies.

"Japan Will Fight"

The *Japan Times and Advertiser*, commenting on the *New York Daily News* editorial urging a more realistic policy toward Japan to avoid two war fronts, said, "Japan would fight" under Article III of the Tripartite Pact in the event America goes to war with Germany.

The Japanese-owned English language journal added that the *New York Daily News* apparently had not studied carefully the pronouncements of the Japanese Foreign Minister.

"Mr. Yosuke Matsuoka has made it clear and it should be apparent to the public press in America that, under the terms of the Tripartite Treaty in the event of an American war on Germany, according to her honorable commitments, Japan would fight," said the local journal.

Japan, continued the Japanese daily, welcomes a realistic attitude toward Japan's policy and work in the Pacific, but "realism would require the abatement of efforts to interfere with Japan's problems on this side of the ocean, such as economic pressure and various intervention measures in China and certain parts of the South Seas.

"Accommodation of these respects certainly should be the starting points for a general agreement."

The *Daily News* stressed the Tokyo newspaper, cannot expect a quiet policy toward Japan by America in order that it could wage war on the Atlantic to be accepted as a condition for "this country to remain aloof when its treaty partner was involved."

Japanese Press Views

Japan's national policy will undergo no change by any disposition of the United States naval units in the Pacific as well as the Atlantic, which may result in the patrol system, the newspaper *Asahi* declared editorially.

President Roosevelt's reaffirmation of the United States policy of effective aid to Britain and the possibility of American control of Dakar, the Cape Verde Islands and the Azores in the event of the Western Hemisphere being threatened, was "sufficient indication of United States determination" to enter the war.

The *Asahi* declared that "we should pay due attention to changes in the United States naval dispositions in the Atlantic and Pacific because they indicate the United States stand."

Meanwhile, the *Yomiuri*, *Chugai*. *Nichi-Nichi* and the *Miyako*, dismissed as ridiculous the propaganda abroad that Japan was becoming indifferent toward the Tripartite Pact, welcoming the Foreign Minister, Mr. Yosuke Matsuoka's reaffirmation of Japan's immutable foreign policy.

Describing these reports as "puerile and futile attempts" at alienating Japan from Germany, the *Nichi-Nichi* asserted that Japanese public opinion was never affected by such reports.

The *Miyako* opined the purpose of such rumors was to turn the American public's attention to the Atlantic by dispelling fears of a "Japanese menace" in the Pacific.

The paper stressed that Japan was not reluctant to co-operate with the United States only "if she would reconsider her Far East policy," warning that the Netherlands East Indies will be "grossly mistaken if she believes American propaganda."

The *Yomiuri* pointed out Japan's traditional loyalty to international pacts as demonstrated in the Anglo-Japanese Alliance, and declared it will be "a blot on Japan's history" is she forgot the ideal of the Tripartite Pact.

The *Yomiuri* said Japan desired to co-operate with the United States because the ideal of the Tripartite Pact aimed at keeping out the United States from war.

Anglo-Japanese Talks

Sir Robert Craigie, British Ambassador to Japan, was believed to have sounded out the views of Mr. Yosuke Matsuoka toward a possible adjustment of Anglo-Japanese relations during a recent conference with the Japanese Foreign Minister.

Japanese quarters pointed out that Mr. Anthony Eden, British Foreign Secretary, was reported to have made similar soundings when he conferred with Mr. Mamoru Shigemitsu, Japanese Ambassador to London, on June 5.

Japanese quarters believed that the British were desiring to take advantage of Mr. Shigemitsu's return to Japan, due to take place next month, in their efforts to alleviate strained Anglo-Japanese relations.

Because of Germany's advantageous position in the Eastern Mediterranean owing to the victory in Crete and the possibility of a complete Anglo-French break, it was believed that Japan was in a favorable position to drive a bargain with the British.

Nationalistic Japanese elements, however, opposed any rapprochement, either with Britain or the United States, because of Washington's and London's assistance to Chungking in the past, and the economic pressure placed on Japan.

On the other hand, moderate leaders were hoping that a non-aggression pact might be concluded despite denials by both Washington and Tokyo that any such negotiations have been started.

Diplomatic quarters generally believed that Axis diplomats were making efforts to draw Japan closer to the Axis and stiffen her attitude toward the democracies—the reason for the numerous conferences by Axis diplomats with Mr. Matsuoka.

N.E.I. Crisis

Tokyo officialdom continued to maintain the utmost reserve regarding the Netherlands East Indies crisis brought about by an unsatisfactory Batavia reply to the latest Japanese proposals.

The Foreign Office's attitude regarding the Netherlands East Indies' reply to the Japanese trade formula was understood to have stiffened considerably after careful study of the contents of the Dutch answer when high officials of the Foreign Office met.

Representatives of all Ministries connected with the Japanese trade talks with the Netherlands East Indies assembled at the Foreign Office and exchanged views regarding the N.E.I. reply. However results of the conference were not divulged.

Instructions regarding the Japanese government's attitude toward the reply of the Netherlands East Indies were dispatched to Mr. Kenkichi Yoshizawa, Chief Japanese Delegate at Batavia on June 12.

The action followed final agreement regarding the matter reached at a conference of the highest leaders of the government and the completion of the drafting of the instructions by Foreign Official experts.

Because of increasing tension in relations between Japan and the Netherlands East Indies many Japanese residents are leaving the East Indies, according to a report received from Batavia by the Tokyo *Asahi*.

Women and children began to evacuate at the beginning of this year. With negotiations showing no signs of improving 57 more Japanese evacuated on May 31. Forty-seven women and children were said to be sailing on June 12. The *Nissyo Maru*, *Kitano Maru* and *Haruna Maru* are reported to be completely booked up for future sailings.

There was no possibility for a compromise now because of the "stiffened attitude" of the Netherlands East Indies Mr. Kenkichi Yoshizawa, Chief Japanese economic delegate to the N.E.I., told the *Yomiuri* in a radio-telephone conversation.

The *Yomiuri* said that Mr. Yoshizawa stated, "Personally, I think that it is unnecessary to confer again with the N.E.I. authorities before my departure unless Mr. Yosuke Matsuoka (Japanese Foreign Minister) instructs me. . . .

"The stiffened attitude of the N.E.I. leaves no room for compromise."

Mr. Yoshizawa, according to the *Yomiuri*, revealed that public opinion in the N.E.I. was "intense" and the Dutch economic delegates' stand was applauded and supported by the press.

Mr. Yoshizawa probably will sail for Japan from Batavia aboard the *Nissho Maru* on June 29.

U.S. Aid Expected

While authoritative reports said there were hopes the Japan-N.E.I. negotiations would not completely collapse, following a call made by the Chief Japanese Delegate Mr. Kenkichi Yoshizawa, and the Japanese Consul-General Mr. Yutaka Ishizawa, on Mr. J. H. van Mook and Mr. J. E. van Hoogstraten, N.E.I. economic officials, newspapers in Batavia gave prominence to Washington reports suggesting that the United States would aid the N.E.I. in case of an emergency.

Reports said that the Japanese officials sought explanations regarding points not clear in the N.E.I. memorandum handed to the Japanese delegates on June 6.

Batavia newspapers played up with equal prominence an American news agency's dispatches on the attitude of the Japanese Government as well as Tokyo press comments regarding the Netherlands East Indies' reply to the Japanese trade formula.

Stating the United States diplomatic policy naturally would change if the current relationship between Japan and the Netherlands East Indies had undergone a change, the American news agency's report said if such a change arrived, the United States probably would extend military aid to the N.E.I. in place of the present moral support.

Meanwhile, although N.E.I. newspapers refrained from commenting on the possible "firm" attitude to be adopted by the Japanese Government, officials, as well as the public in general, appeared anxious to know what actual step the Japanese Government would take in the light of the latest Dutch reply.

Reaction In U.S.A.

The Japanese Government is demanding that the Netherlands East Indies curtail their rubber export to the United States and oil export to Singapore to meet Japanese needs, Washington government quarters reported.

Dr. E. N. Van Kleffens, Foreign Minister of the Dutch Government visiting Washington declared that he saw no serious conflict between United States procurement of vital raw materials from the Netherlands East Indies and Japanese attempts to get war materials there.

"Japan, within reason, can have what can be spared," he declared. "We are reasonable people but we are against anybody acquiring a predominant position. . . . .

"The oil agreement with Japan worked out pretty well, and it was renewed a few days ago for six months I do not think the Japanese are quite satisfied, but they are difficult to satisfy," Dr. Van Kleffens added.

Dr. Van Kleffens said that he discussed many subjects with President Roosevelt when the two conferred on June 4.

The Dutch Foreign Minister, who has just completed a trip to the Philippines, the Netherlands East Indies, Australia and New Zealand, declared that he had been impressed by the defenses of the N.E.I. and the moral of the people there.

Dr. Van Kleffens claimed that the N.E.I. thus far had received nothing from the United States under the lend-and-Lease Bill.

Dr. Van Kleffens made it clear that the N.E.I. was taking precautions that none of the resources should reach Germany via Japan, although he said he had no evidence so far that any Dutch exports were reaching Germany.

The Netherlands Legation said Dr. Van Kleffens would go to Canada as the guest of the Canadian Government after visiting Chicago. While in Canada he will visit Princess Juliana. The Legation said Dr. Van Kleffens would return via Boston and New York *en route* to London.

Defenses Strong

A reliable and informed Dutch source declared at Singapore that the Netherlands East Indies was definitely less apprehensive regarding a possible invasion threat now than in the past because defense preparations were progressing unceasingly in the N.E.I.

One of the newest and best defense projects was the construction of 400 motor torpedo-boats, equipped with United States-manufactured aeroplane motors, capable of a speed of 52 knots, this source stated.

The Dutch source pointed out that N.E.I. ship-building facilities would preclude construction of any vessels of more than 15,000 tons weight and as a result the Dutch have concentrated on construction of mosquito boats. The N.E.I. is "amply supplied" with materials necessary for such construction, the source added.

The Dutch source claimed that the N.E.I. air force was extremely powerful, and included American-made long-range bombers.

The source said that godowns throughout the Indies were crammed with exportable materials which have been held up due to the shortage in bottoms. He claimed, however, that this shortage probably would be short-lived because the Government was reconditioning "large numbers" of Dutch merchantmen which have been laid up in N.E.I. ports for a long period.

This source claimed that reconditioning of the vessels was proceeding unceasingly in all ports where coastal vessels call, adding that the clanging of shipwrights' hammers was audible 24 hours a day.

Germany Interested

In the Dutch News paper *Haagsche Post* of March 29, 1941, there is an article on Netherlands India, which indicates that Germany regards this part of the Netherlands Empire as belonging to her domain and that she would not regard favorably any ambitions Japan may have in that respect.

The *Haagsche Post* is at present of course under German control, and one may be sure that the opinions voiced originated in German quarters. The more so as the living spaces, into which the world organized on an Axis pattern is to be sub-divided, are frequently mentioned. There would be no more pernicious development as the one sided orientation of Netherlands India, economy advocated by the enemy.

The article follows :—

"As far as may be gathered from the little news we receive these days, the negotiations between the Japanese and the Netherlands delegates are proceeding a little more favorably although no definite results have been reached as yet.

"Nevertheless this should not give rise to undue optimism. Experience has shown that in negotiations with the Japanese new influences are apt to arise suddenly which can cause an equally sudden change in the aspects of things.

"As long as we have no more complete information concerning the differences between Netherlands India and Japan we are unable to judge whether the negotiations are being conducted on a more friendly footing.

"What we can judge of however, is the fact that it is not only of interest to the Netherlands, but also to Europe that Netherlands India retain its vital connection with the European continental "living space" and so will be able to remain, as before, an important source of raw materials for the New Europe.

"This would certainly not be the case if, in some way, Netherlands India become either politically or economically dependent on a foreign power which has set itself the task of establishing a new order, the aspects of which do not appear to be clear to anyone as yet.

"Up till now Netherlands India has been able to satisfy everyone by maintaining a strict open door policy and by insisting on its sovereignty.

"And if, after the war is over, Netherlands India will again be called upon to supply the world, which will then be divided in peaceful neighboring continental spaces with raw materials, it is our opinion that she will only be able to fulfil that important task under Netherlands guidance.

Through a colonization of three centuries Netherlands India has become a part of our country and our labor and enterprise have made it a model of colonized tropical possessions. The prosperity and productive power created by us have benefited not only the world but also the native population.

"We can say this without prejudice. for the facts and results are more eloquent than words and it is gratifying that this was and is admitted by everyone, in particular by Germany.

"No less than the great expert on Netherlands India the Government-adviser Helfferich, has always pointed out to our Eastern neighbors the importance of the Netherlands as colonizers.

"We can therefore be sure that those who are striving to create a new Order in Europe will realize the necessity of maintaining the unity of the Netherlands with her tropical possessions.

"This may be a reason for optimism even if the negotiations in Batavia should take a turn for the worse, which we hope will not occur."

To Yield Extraterritorialty

The United States will move to relinquish special extraterritorial rights in China when peace is restored there. Mr. Cordell Hull, Secretary of State, announced on June 1.

Mr. Hull made public letters he exchanged with Dr. Quo Tai-chi, former Chinese Ambassador to England, who now is *en route* to Chungking, to assume the Foreign Ministership.

Dr. Quo, in his letters, promised that China would seek the fullest application of freer international trade and a broader cultural exchange when peace is restored.

"Without reservation," Mr. Hull said, "we are confident that the cause to which we are committed, along with China and other countries—namely, national security, and fair ruling among nations with justice—will prevail.

Dr. Quo wrote that he hoped eventually world conditions would permit freer trade and a broader cultural exchange between nations. "Upon restoration of peace," Dr. Quo wrote, "The Chinese Government desires and expects to seek and effect the fullest application of those principles in its own economy and in its political and economic relations with other countries"

Mr. Hull's reply said in part that "as you also are aware, the Government and people (of the United States) long have had profound interest in the welfare and progress of China.

Abolition of extraterritoriality in China was described by Washington diplomatic quarters as one of the United States' peace aims in the Far East, and this aim was hailed by some Congressional circles as proof of America's non-imperialistic policy in the Far East.

Even Congressional leaders who have not been sympathetic to the Administration's foreign policy praised the exchange of Notes between Mr. Cordell Hull, Secretary of State, and Dr. Quo Tai-chi, retiring Chinese Ambassador to London who is scheduled to become Chungking's Foreign Minister. They hailed also Mr. Hull's forthright statement to the press of the United States' intention to renounce special privileges in China when peace is restored.

Analysts said that Mr. Hull's statement for the first time gave the United States' Far Eastern policy a positive basis apart from preservation of the *status quo*, which obviously constituted a less appealing program than positive measures.

Mr. Hull's statement was also viewed in relationship to the statement of war aims by Mr. Anthony Eden, British Foreign Secretary, last week, the two statements being believed to provide an Asiatic and European basis for peace negotiations.

Some quarters which have long held the view that China, if victorious, may be more dangerous than Japan as the dominant Far East power, viewed sceptically Mr. Hull's statement. They considered it essential that the United States retain its commercial foothold in China on the same basis as at present.

Congressional leaders were less enthusiastic about the reported policy of permitting United States Army pilots and mechanics to resign and enlist in service for China.

The State Department denied that it had entered into any arrangement with the Chinese Government concerning pilots, but there seemed to be abundant confirmation that the Army, independently, was placing no hindrance in the paths of resignations for this purpose. Enlistments for service with China seemed to be increasing in numbers.

Hull Criticized

Openly branding as "without meaning" and "laughable," the powerful Tokyo *Nichi-Nichi*, and the nationalist *Kokumin*, editorially ridiculed Secretary of State Cordell Hull's open letter to Chungking Foreign Minister Quo Tai-chi promising eventual relinquishment of extraterritorial rights by the United States in the event of a victory over Japan by Chiang Kai-shek's regime.

The *Nichi-Nichi* surmised that Secretary Hull's letter was intended merely as a sop to Chungking's feelings inasmuch as President Roosevelt, in his eagerly-awaited fireside chat failed to touch concretely on China problems.

Promise of abolishment of extraterritoriality "following the return of peace" is without the slightest meaning, the *Nichi-Nichi* said, because "no one can deny" that the Chungking regime is facing imminent collapse.

At the same time, the *Nichi-Nichi* declared, Japan will continue to fully support and strengthen the Government at Nanking, as well as work for the overthrow of the Chungking regime.

The principle of freedom from extraterritorility rights is one of the mainposts of the New Order in East Asia, which Chungking has been rejecting, and that the United States should make the same proposal at this late date is "inconsistent," the *Nichi-Nichi* declared

Echoing the views expressed by the *Nichi-Nichi*, the nationalistic *Kokumin* declared that Secretary Hull's letter to the Chungking Foreign Minister is an "empty document."

The *Kokumin* wondered if the United States actually believed that Chungking would ever defeat the Nanking government which "obviously was the only condition" under which Mr. Hull's promise would work.

American Pilots for China

The United States Army, according to a highly authoritative source, is now granting permission to expert pilots and mechanics to resign from the Army Air Corps to fly in China.

Regarding the capacity in which the American army airmen would serve in China, information from different quarters was conflicting but one usually reliable source indicated they would man combat planes, as well as transports. War Department officials refused to discuss the matter.

A number of pilots and mechanics are understood to be already on their way to China.

The United Press was informed that permission to accept employment in China is being granted to combat pilots with a year or more of training, and to graduate mechanics. The arrangements were said to permit the volunteers to retain their American citizenship, and they will be subject to recall at any time the Army authorities decide.

A Chinese official who confirmed that such arrangements had been made with the United States Army stated that the Americans would be employed exclusively in transport service. Asked why, in that case, China should seek pilots trained in combat and bombing tactics, the informant said experienced military pilots were needed because of the danger of Japanese attacks on passenger planes.

Unofficial observers familiar with the American aviation training program expressed the opinion that a considerable number of American experts could be made available to China as a result of the present training program, designed to turn out 30,000 pilots and 100,000 aviation mechanics annually.

The unconfirmed reports heard in some quarters that the American pilots would be assigned to combat duties recalled the recent speech of Senator Claude Pepper, in which the Florida legislator expressed the hope that American pilots would be permitted to fly for Chiang Kai-shek and to do to Tokyo what Japan has done to China.

Question of Mediation

Government sources at Washington regarded as "trial balloons" Moscow reports of Japanese proposals that the United States should mediate in the Sino-Japanese war.

Most official sources refused even to comment on the reports, and informed sources said that the story, originally published in New York under a Tokyo dateline, probably expressed semi-official

Japanese desires to sound out the United States and China regarding such a plan.

Officials declined to confirm or deny whether such a proposal actually was received here. Informed sources said, however, that it was very doubtful if a proposal had been received.

Some individual leaders, such as Senator Elbert D. Thomas, Democrat of Utah and one of the Administration's staunchest foreign policy bulwarks and also an authority on the Far East, did comment however.

Senator Thomas told the United Press that mediation itself—apart from conditions conveyed in the *Pravda* report, which he dismissed as unrealistic—was worthy of consideration.

Senator Thomas said that he long ago had urged gradual settlement of the Sino-Japanese war by progressive mediation of individual difference. A board of American mediators agreeable to both China and Japan, by tackling one problem at a time, could gradually liquidate the conflict on a realistic basis and restore equilibrium in the Far East, he said.

However, any mediation proposal which did not before hand concede the equality of Tokyo and Chungking was doomed to failure, Senator Thomas said. The question of Japanese recognition of Generalissimo Chiang Kai-shek could not be the subject of mediation, he said. Likewise, mediation could not concern itself with Japanese willingness or unwillingness to forego a southward push.

"There can be no trading of rights in China for rights in the South Pacific," said Senator Thomas. "China is sovereign in reality as well as in law. Japanese willingness to forego a march southward cannot be used as a trading point for additional rights in China. The issues are separate.

"China's rights have been established on her willingness and ability to fight for them," Senator Thomas said, "and mediation cannot trade such rights away. Only controversial issues can be mediated, not the fundamental right to exist and to be a sovereign power."

Senator Elmer Thomas, Democrat of Oklahoma, suggested that the Pan-American Union or individual Latin American countries might be made parties to such mediation, in order to broaden its base.

Most other sources were cold to mediation, unless Japan agreed beforehand to recognize China's complete sovereignty. Nevertheless, many keen observers believed that the situation for settlement of the Sino-Japanese war was more favorable than at any time since 1938. Numerous Japanese hints of a desire to liquidate the conflict coincided with an unexpressed anxiety among Americans concerning the hypothetical possibility of a war with Germany while relations with Japan were not clarified.

"Puppet of the U.S."

The Tokyo *Asahi* in an editorial on May 27 on "Chungking Regime: American Puppet" asserted that despite Chiang Kai-shek's desperate appeals for American assistance, realizing that this now was his only hope, Chinese masses have come increasingly to realize the folly of prolonging resistance, with American help, which in a final analysis is more than another imperialistic investment concealed behind the benign mask of idealism and altruism.

The editorial said that Mr. Clarence E. Gauss, new United States Ambassador who arrived in Chungking on May 22, would now preside over Chungking's affairs in a much greater rôle than a diplomatic representative in view of the difficulties in which Chiang Kai-shek had been placed as a result of the Soviet-Japanese Pact and the convincing success of Japanese military drives in north, central and south China.

It was significant that simultaneously the Aid to Chiang Kai-shek Movement was given fresh impetus in various places in the United States. These included, first the U.S.$5,000,000 collection during China Relief Week beginning on May 18 in which 200 American State and Municipal officials played leading rôles, and secondly prayer meetings for Chinese war dead at churches throughout the United States on May 25.

The recent conclusion of the U.S.$50,000,000 Currency Stabilization Agreement between Chungking and Washington must be interpreted as the United States reply to the Soviet-Japanese Treaty.

It was reported that at the same time American aviators were continuing to help Chungking train its air force while America was said to have *en route* 20 Flying Fortresses and 400 fighters. All these gestures fall in line with Chiang Kai-shek's repeated outcries urging the United States to enter into the world conflict in order to crush the European dictators in the West, and to crush the Japanese fleet in the Pacific in order to frustrate Japan's southward program to safeguard American rights and interests in Asia.

There was no denying, the *Asahi* said, that Chungking inwardly feared America's ulterior motives, knowing American genius lay not only in the missionary field, but also in hard business.

It would be foolish to pretend this realization had been successfully kept away from the thinking groups, and the truly patriotic Chinese, the daily declared.

Chiang himself on various occasions expressed his ill pleasure over the fact that every American protest to Japan was connected with the Sino-Japanese conflict and were claims for American interests and rights, rather than anything else, it was pointed out.

The newspaper recalled the scathing denunciation of the United States materialistic motives coming from no other than Madame Chiang and recently published in a widely circulated journal.

The *Asahi* mentioned the wave of rumors in Chungking to the effect that the Chinese Communists would throw in their lot with the Nanking Government and would jointly attack the Central Armies.

Whatever the truth of these rumors, it was declared, it was true the Communist troops merely looked on during the recent Japanese drives in Shansi and Honan against weakened Central troops in Chiang Kai-shek's First War Zone.

Side by side with growing American attempts to bolster Chiang Kai-shek's resistance, there has been an increased awakening among the Chinese masses to the fact that the Chungking regime had been reduced to the rôle of an "American puppet," the *Asahi* said.

Chungking cannot continue resistance without gravely and perhaps irrevocably sacrificing China's integrity, the preservation of which had been Chiang Kai-shek's advertised aim, the newspaper continued.

Britain and Thai

Unless Thailand is able to shake off the strong British economic influence in the country, her participation in the new East Asia set-up will be difficult, declares the *Tokyo Yomiuri* in an editorial.

Japan is, therefore, urged to strive for closer economic relations with Thailand.

This, the newspaper declares, is absolutely necessary to remove British economic influence from Thailand.

Proceeding, the *Yomiuri* points out that more than 50 per cent of imports into Thailand are of British origin, while more than 90 per cent of the country's exports are to Britain.

In addition, Britain is said to hold 83 per cent of Thai foreign notes amounting to £13,630,000, and more than 90 per cent of the Thai currency reserve fund is reported to be kept in Britain.

"In the circumstances," adds the paper, "it is not too much to say that the national economy of Thailand is virtually under British control. Thailand has attempted several times to reform its currency system, but has been forced to accept the British plan in every instance. Since Britain's influence has penetrated deeply into every nook of Thai commerce and industry as well as politically, it will not be easy for Thailand to eradicate this evil."

U.S. Aviation Experts In Chungking

Three high U.S. military and naval aviation experts arrived in Chungking on May 17 by plane from Hongkong, but no announcement was made as to reasons for their visit to Chungking, whether they constituted a special mission or merely came here to observe Japanese bombing raids.

Brigadier-General Henry B. Clagett, new commander of the U.S. Air Corps, Philippine Department, Lieutenant-Colonel Harold H. George, U.S. Air Corps, and Commander Francis R. McDonnell, U.S. Navy Air Force, were the aviation experts who arrived.

There was no information available as to the length of their stay here.

Meanwhile, the official Central News Agency reported from Hongkong that Chinese residents of the United States had already collected U.S.$3,000,000 for the China air force fund and an additional U.S.$2,000,000 would be collected before July.

Tea Leaves from Lo Pat's Garden

by Shamus A'Rabbitt

Those of us who have too much sense to mix
In social affairs
Never know
What a favor we are doing society.

◆◆◆◆◆◆

Some of us measure our sociability
In terms of dollars and cents
And then wonder why we have
Friends on the same terms.

◆◆◆◆◆◆

Philosophers and spinsters have their solitude
And try to make us believe they enjoy it.

◆◆◆◆◆◆

To practice deception
Is a confession
Of weakness.

◆◆◆◆◆◆

That which is considered clever by knaves
Is thought despicable by the upright.

◆◆◆◆◆◆

Those who desire to reform the world
Should stop the propagation of fools.

◆◆◆◆◆◆

A *fool* is
One who will not take our advice.
A *crank* is
One who forces his opinion upon us.
A *friend* is
One who sees in us no wrong.

◆◆◆◆◆◆

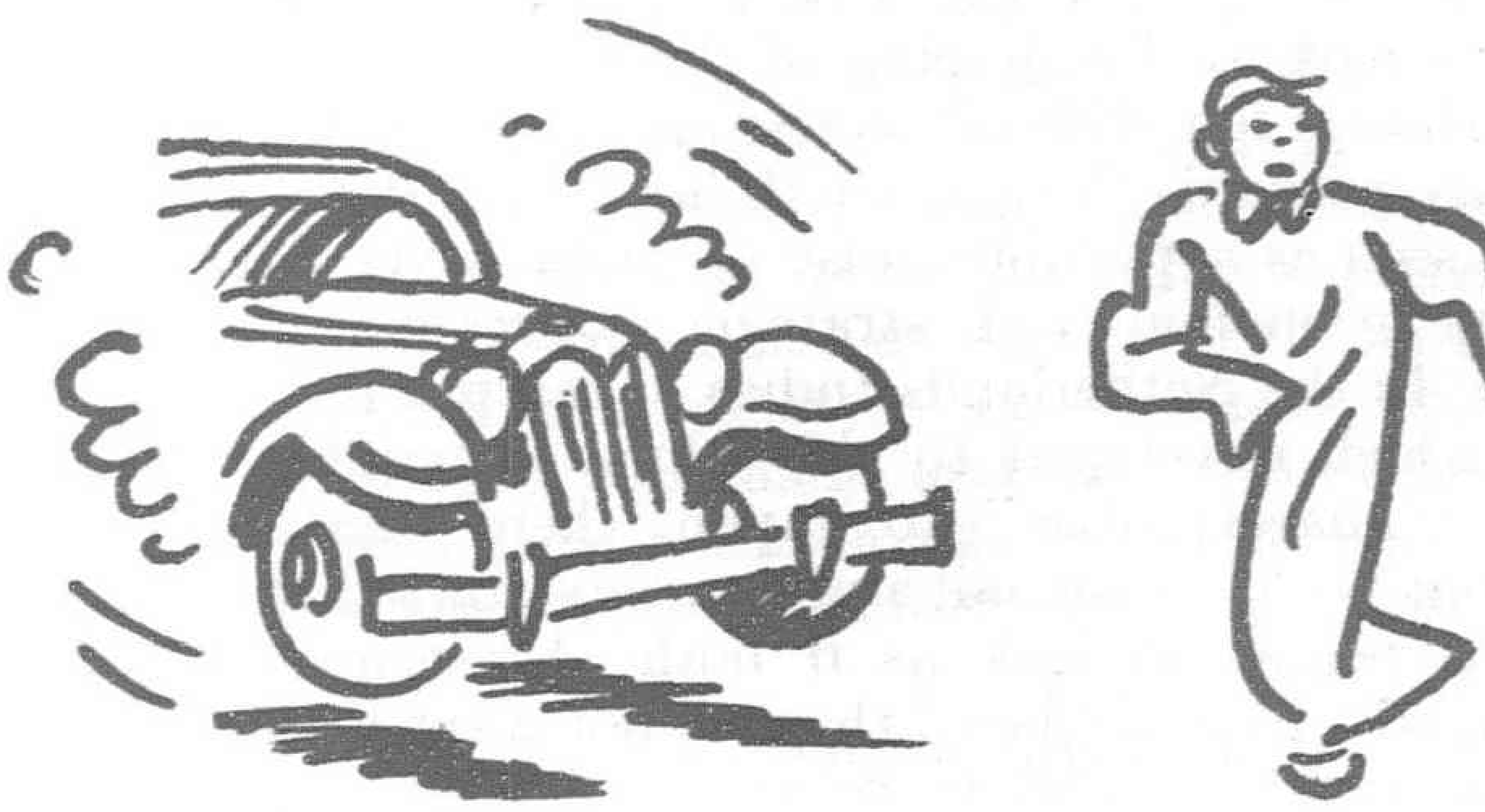
We are all tools—
Keen—sharp—dull—or soft—
Depending on the treatment we receive
In the furnace of life.

◆◆◆◆◆◆

The elements of virtue must be fused
With an *iron* character.

◆◆◆◆◆◆

Are we musical, joyful,
Poetic,
Generous, forgiving,
Fond of our fellows,
Considerate of their feelings?
And lo!
Our virtues
Are as rocks
On the path
Of our existence.



History does not even record
Of the jay-walker that:
He was honest but did not have the sense
To look where he was going.

◆◆◆◆◆◆

To indulge
In outward mourning overmuch
Resembles one who protesteth
His honesty.

◆◆◆◆◆◆

Excessive ceremony
Generates hypocrisy.

◆◆◆◆◆◆

Ceremonies give
The unscrupulous
Opportunity to pose
As monuments of virtue.

◆◆◆◆◆◆

'Tis strange if the practice of virtue
Brings the happiness claimed
That the preaching of it
Should be done with such a sad face.

◆◆◆◆◆◆

We may abhor drunkenness
But *Drink* is the robber
Who steals the cloak
Of hypocrisy.

◆◆◆◆◆◆

Jazz is an abomination
To those with elevated eyebrows
Until they feel its vibrations.

Pacific Factors for Washington to Weigh

By WILLIAM HOSOKAWA

MANY times during the first half of the year, that antipathy between Japan and the United States first built up over the Manchurian issue in 1931 and rising to a quivering crescendo through the months since late 1937, threatened to burst out into the first war between the two great Pacific powers. The reason for this threatening war was not national rivalry as such, jealousy or economic incompatibility between the two directly ; it rose from a tangle whose knots enmeshed such related factors as the future of China, the future of the British Empire, the future of the Netherlands Indies, the future of Nazism—and only through them the matter of Japan's dream of empire couched in her New Order, and the Rooseveltian concept of American democracy's part in the shaping of the world to come.

More than a few difficult milestones have been passed by the two nations without the expected hostilities developing. Indo-China was seen as a possible cause of conflict, yet Japan marched in, got her economic and strategic concessions, and nothing happened. In the Netherlands Indies Japan put forward economic proposals which developed to the "final demands" stage. The reply was "unacceptable" to Japan, there were hot words of criticism, but no navy set sail and no army started the march.

Now it begins to look as if both American and Japanese spokesmen, who have declared they do not want war in the Pacific if they can avoid it, that there are no issues between the two countries impossible of peaceful solution, really meant what they were saying. Consequently there is a growing belief that whatever action these two nations take appearing to threaten peace may be interpreted as significant but not conclusive moves in a Pacific "war of nerves."

The danger, however, is by no means over. There are fundamental differences standing between the two which cannot remain unsolved and permit a lasting peace, but for the time being at least, it appears that the realities of the situation have impressed themselves upon government leaders.

A Significant Omission

Certain signs are unmistakable. President Roosevelt did not leave out reference to Japan in his recent "Fireside Chat" without reason. There was canny consideration behind his decision not to tighten economic restrictions against Japan, for there is no surer way to strengthen the case for Japanese extremists who cry of interference and persecution. This was realistic acknowledgment of the fact that America's first danger is on the Atlantic, that America's material and industrial output has its limitations and first things must come first. It would be folly to provoke Japan under these circumstances when provocation is so unnecessary.

Japan, likewise, made no effort to force a showdown in the Netherlands Indies although the blustering talk in some circles aroused fears that she might do just that. This too was realistic acknowledgment of the fact that the Batavia government has Britain and the United States solidly behind it, that Japan herself is feeling the strain of four years in China, that there is acute danger in chewing off more than can be swallowed, especially when one's mouth is already pretty well filled.

In Washington there was a somewhat questionable report that the Japanese Ambassador, Admiral Kichisaburo Nomura, was seeking the same sort of non-aggression pact that Foreign Minister Matsuoka negotiated in Moscow. The denial of this story from Japanese and American circles brought out that both Ambassador Grew in Tokyo and Ambassador Nomura in Washington have been actively searching for a means to better relations between their respective countries. Perhaps it is significant that the two nations continue to rely on those envoys, for Ambassador Grew knows Japan as few Americans do and he has been a stalwart champion of American-Japanese accord while Ambassador Nomura whose very appointment was a triumph for moderates in Japan, is definitely for conciliation with the United States.

In Anglo-Japanese relations too, there have been persistent reports that the impending return of Ambassador Shigemitsu for conferences in Tokyo will be used to better relations. British Ambassador Craigie in Tokyo has been active while Japanese officials have been in frequent conference with Foreign Secretary Anthony Eden.

A Changing Viewpoint

In the broader field of American public opinion the Far Eastern issue now seems to be less a matter of American intervention for the preservation and guarantee of peace in the Pacific, and more one of protecting America and her interests. There is still considerable talk of helping to save China, referred in all seriousness as the "last outpost of democracy in the Far East." But that argument has begun to crumble over the realization that whatever action the United States takes in the Far East will be first and foremost in American and British interests, be it to keep the Japanese too busy to go adventuring elsewhere by strengthening China, to safeguard the Philippines, to keep the Singapore fortress intact as Britain's Far Eastern Gibraltar, or to preserve the Malayan and Netherlands Indies' rubber and tin for Anglo-American consumption.

Thus the American concept of the Far Eastern problem to a certain extent has been modified from one of grandiose guarantee of the *status quo* everywhere in the world, to a saner and more realistic one of preservation of American rights and interests through aiding her friends in trouble. So far as Japan goes, this change in attitude has helped ease the pressure to some extent.

However, easing of pressure between Japan and the United States is not sufficient for either nation, and especially America. The resulting less hostile attitude is neither a lasting nor completely desirable solution. It is merely a postponement of the final showdown, and it is being too optimistic to believe that time will eliminate basic ills. Decreasing hostility is only a sign that rapprochement has been made easier.

America has stated unequivocally that Japan must change her policy toward China, that China's independence and integrity be honored, that American rights and interests in the Far East be respected, that Japan must cease to co-operate with the Italo-German Axis. Japan has declared with equal determination that the United States must cease her aid to the Chungking government and recognize the validity of the New Order in Greater East Asia which Japan interprets as Japanese leadership of the Orient.

Somewhere between the two points of view lies the compromise that must be reached if a solution by force of arms is to be avoided, a compromise which neither nation in its present frame of mind is willing to consider. Japan stoutly maintains that the United States must take the first step, and Washington is equally adamant that it must be Tokyo who shows the initiative. Thus the present stalemate.

Let us examine the particulars of this stalemate from the viewpoint of Anglo-American interests and their relation to the Axis powers. We find America in the throes of a tremendous effort to supply Britain with planes, ships, tanks, guns, food and perhaps eventually men with which to stop and turn back the advance of Nazism. The democracies are making a desperate stern chase and Germany working with a large head start, now has the resources and manpower of all continental Europe harnessed to her war effort. For the democracies, every man, every minute, every gun, plane and ship is of utmost importance.

Churchill's Admissions

On this point some passages from Prime Minister Winston Churchill's statement to the House of Commons on June 10 are appropriate. He said in part :

> "To answer the question why not enough guns were provided for the two serviceable airfields in Crete, one would

have to consider whether we could spare them for that purpose. That leads us to a wider sphere. All this time, the Battle of the Atlantic has been going on, and a very great number of guns which might usefully have been employed in Crete have been and are being mounted on merchant vessels to beat off attacks of Focke-Wulff and Heinkel aircraft whose depredations have been lessened thereby.

"Again we must consider whether our airfields at home, our air factories or ports and cities, which are under heavy and dangerous attacks, should have been further denuded or stinted of guns in the last six or seven months for the sake of war in the Middle East beyond what we have done. Furthermore what we send to the Middle East is out of action the best part of three months as it has to go round the Cape.

"We have run very great risks . . . in order to sustain the war in the Mediterranean and nobody can be the judge whether we should have run more risks or exposed ourselves to heavier punishment at home for the sake of fortifying and multiplying the Cretan airfields, without having full and intimate knowledge of all our resources . . .

". . . a man must be a perfect fool who thinks we have large quantities of anti-aircraft guns and aircraft lying about unused at the present time. So far as anti-aircraft guns are concerned, large and expanding as is our present production, every single gun is in action at some necessary point or other, and all future production for many months is eagerly competed for by rival claimants with very often massive cases behind each one. . . . .

"The enemy, with his vast local superiority in air-power, was able to drive our aircraft from the airfields in Greece and adding this to his enormously superior anti-aircraft batteries, he was able to make those airfields rapidly available for his own use."

It is undisputable that Britain needs every ounce of material ielp that America can give, and any diversion of American efforts s a distinct hazard.

Now let us examine Japan's position. She signed the Tripartite Pact and became a full-fledged member of the Axis. Her rôle is 1ot fully revealed, but it is obvious that collapse of the British Empire would provide her much opportunity for expansion, something which Anglo-American opposition has long frustrated. On the ther hand there is the possibility of Axis defeat, which leaves her vith the undesirable prospect of having to face both Britain and he United States by herself. She can tread the comparatively afe middle road, as she is now, by remaining technically at peace, vorking to advance her own interests, trying to settle the burdenome war in China, and harassing but never irritating to extreme he Anglo-American combine.

Passively A Major Factor

In other words Japan can play a passive rôle in the stalemate vith the democracies, gain much herself, effectively aid Germany, nd cripple the Anglo-American war effort. The stalemate, whether r not it is to her liking, is to her advantage, and she can accomplish ll the preceding simply by growling and glowering every so often. he can afford this stalemate, perhaps not indefinitely, but much 1ore profitably than the United States. She can play her rôle in erman plans without ever going to war or seriously risking war ith Britain and the United States so long as Germany holds the pper hand, and candidly the Nazis appear to be able to hold that dvantage for some little time yet.

There has been considerable talk of Japan's rôle should the nited States go to war against the Nazis. Under Article 3 of the ripartite Pact, Japan is required to fight if America attacks ermany. However, it is likely that despite the assertions of apanese, German and especially Italian spokesmen, Japan will not e forced into war against her will under the Pact because of many ossible interpretations put to that portion of the agreement, and 1e possible presence of escape clauses.

Regardless of whether or not Japan is obliged to go to war, whether she actually does become a belligerent after American 1try, Japan is playing her rôle to-day, now, merely by being onsidered a power hostile to Britain and America. She is a most fective Axis partner in her present static state.

Because of Japan's position, the United States must keep its ıst Pacific Fleet in Hawaiian or California waters. Britain must maintain 100,000 men in Singapore and Malaya together with a large number of planes, heavy guns and tanks so badly needed elsewhere. The armaments that are just beginning to roll out of American defense factories must be divided between aid to Britain, American Atlantic and Pacific coastal defense, and defense of the Hawaiian, Philippine and other Pacific islands. All this has been necessary without Japan ever making a warlike move.

On the other hand let us consider what might be if Japan were friendly toward Britain and the United States, or even strictly neutral. America's naval power could be shifted to the Atlantic as a threat that Hitler could not mistake, and to assist in keeping those seas clear of Nazi submarines and surface raiders. The U.S. Navy could spare Britain more than 50 old destroyers and a handful of coast guard and torpedo speedboats to protect the badly harassed convoys. The planes and other equipment rushed recently to Hawaii and the Philippines could be diverted to European battlefields where they are in urgent need.

The British, at the time the Balkan campaign loomed, suddenly diverted to Singapore shipload after shipload of crack Anzac troops bound for Egypt. American bombers and fighter planes wanted in Britain, the Balkans and Africa, were sent to Singapore instead because of a potential danger. This substantial force, whipping itself into perfection in Malaya against a still hypothetical enemy, might have provided that last ounce of strength needed to turn the tide in Greece. Those planes might have been the ones that could snatch air superiority from the Nazis over Crete and prevent that defeat. Those Anzac, British and Indian troops oiling their equipment and eating their hearts out might be the ones who could turn the tide in the impending battle for Suez. But they are kept immobilized merely by a threat.

Japan Now in Different Role

Japan as an Allied power in the last war was reassuring for Australia and New Zealand. Those two Dominions to-day could throw their entire effort into producing for Britain if it weren't for the fear that some day there might be an attack from the north. A neutral Japan this time could maintain a neutrality patrol among the Mandated Islands of the south Pacific, somewhat as the Americans are doing in the Atlantic, to keep track of Nazi raiders which have taken a not inconsequential toll in the South Seas. Instead, the Japanese are suspected, although without substantial proof, of sheltering and refueling prowling German raiders.

All this sums up to the gigantic truth that so long as the United States and Japan have no insoluble differences, it is not enough merely to prevent matters from getting worse. It is important to Anglo-American interests to win Japan as a friend. To have Japan as less than a friend is a handicap that the Anglo-American war effort can ill afford at this stage of the fight.

A feeling seems to be developing in the United States that heavy bombers and artillery placed in Chungking hands solve the Pacific problem. The theory is that Chinese troops will be able to launch giant counter-offensives and give the Japanese such a hot time that they will no longer be interested in other wars. If this feeling becomes widespread, it will be a great tribute to the efficacy of Chinese propaganda, for reliance on any such strategy would be only a fool's security. The task of re-arming Chinese troops is as great if not greater than that of building up the British to parity with the Nazis, according to qualified military observers. So far the Chinese have escaped annihilation by steady retreats into interior China, forcing the Japanese to so extend their lines that no concentration of power is possible. The Japanese have won almost every battle of any size, and except in rare instances their defeats were suffered when small detachments along far-strung lines were surprised by large Chinese forces.

If worse came to worse the Japanese could withdraw to natural defense positions along shortened lines and bring concentrations of modern artillery and mechanized power into play. Japanese military spokesmen have welcomed an opportunity to meet the foe face to face, something which has not been possible very often in the pursuit-retreat war of the past two and a half years.

Naval Strength Intact

In the meanwhile the Japanese Navy, and its self-contained landing forces would still be free to fight. The danger of a Japanese

(Continued on page 194)

Shipping Crisis in the Pacific

By DANIEL MARX, Jr.

(Far Eastern Survey)

More than one half of the world's population dwells in the lands bordering the Pacific and Indian Oceans—the Eastern Ocean in the vernacular of mariners. Communication and trade between these countries, as well as with the remainder of the world, are conducted principally by means of ocean transportation. It is not surprising, therefore, that developments in Pacific shipping should at once reflect and react on the rapid political, economic and social transition taking place in the world.

This article will try to analyse some of the causal relationships and to evaluate their net effect on Pacific shipping, as far as the present and immediate future are concerned. It is not possible at this time to trace these disturbances to their ultimate conclusions, unless heroic assumptions are made regarding the future course of events. In fact, in addition to the usual difficulty of lack of perspective in the writing of contemporary history, even of such limited scope as this, there is a further handicap—the paucity of factual data available. Sailing schedules of vessels of belligerent powers in the European war operating anywhere at all in overseas trade are not published; trade and shipping statistics of almost all powers are published two years late, and in a few cases not at all during the "emergency." Claims and counterclaims, often intended to mislead, are abundant. Freight rates, usually a fairly reliable indication of the relative condition of the supply of and demand for cargo space, are subjected to the strictest control in most trade routes and as a result lose their significance as barometers.

In the prewar pattern of shipping in the Pacific, practically all merchant vessels operating in this area belonged to nations that are now belligerents, with the exception of the United States which is a technical neutral (*cf.* Table I). The United States plays only a minor rôle in the shipping of most of the countries bordering the Pacific, and with the exception of the west coast South American countries (not shown on the table), the Philippines, New Zealand and her own commerce, United States ships did not account for more than ten per cent of the vessels trading with these nations.

Ample Tonnage Two Years Ago

There was no scarcity of shipping in this area when the European war started in September 1939. Japan, it is true, was experiencing a shortage of vessels operating under her own flag in connection with her military activities in China. This problem, however, was financial rather than physical. If Japan had not been reluctant to withdraw still more of her vessels from foreign trades where they were earning much-needed foreign exchange, and to charter more foreign bottoms which would also impair her balance of payments, there need not have been a shortage. Ships are very mobile in more than the obvious sense and under normal conditions tend to gravitate to the most remunerative routes. It is for this reason that the shipping of any particular area cannot be considered without regard to world shipping conditions in general. Prior to the fall of 1939, there was ample tonnage to accommodate the world's trade and Japan's military requirements.

The effects of hostilities in Europe did not seem to extend immediately to Pacific shipping. It was frequently commented that the historic shortage of shipping experienced in World War I was extremely slow in being repeated. The reasons for this were: (1) the merchant marine of Germany was not as significant in 1939 as it had been in 1914, and Austria-Hungary had no merchant fleet in 1939, though the Yugoslav merchant fleet was, until April 1941, its neutral successor; (2) the British and French, benefiting by their previous experience, instituted effective measures to control their shipping resources earlier; (3) Italian tonnage was still available in the Pacific and elsewhere until June 1940; (4) the United States and Japan had considerably more effective merchant marines in 1939 than in 1914 and were placing more vessels in the Pacific trades. The United States did this because it was seeking to utilize ships banned from European "combat zones" by the neutrality legislation in trades that were being vacated by vessels of other nations who were free to participate in the more remunerative war-zone business. The Japanese in turn thought it a part of their program to constitute a New Order in Asia to provide shipping facilities to the area over which they desired to extend their political and economic hegemony. (5) Finally, the volume of business declined because of the more stringent application of trade restrictions by the Allies in regard to their own commerce and that of their colonies, and because of their blockade of Germany, both of which were applied with more alacrity than in World War I. It is true that the volume of trade also declined in 1914. Unfortunately, comparable statistics for the first year of the present conflict are not available in sufficient detail to permit a comparison of the shrinkage in each case. A substantial decline did take place because of the more effective methods of control and blockade and their earlier application.

TABLE I

PRINCIPAL COUNTRIES SHARING IN OVERSEAS SHIPPING OF PACIFIC AREA NATIONS* PRIOR TO FULL IMPACT OF EUROPEAN WAR

Nationality of Tonnage in Overseas Shipping

(In percentages based on entrance and/or clearance tonnage statistics)

Country	*Year*	*American*	*British*	*Japanese*	*Netherlands*	*Norwegian*	*Other*
ASIA:							
Japan ..	.. 1939	1.6	11.2	67.2	1.8	3.8	1.45
Manchoukuo	.. 1938	0.1	10.5	65.6 (*a*)	0.8	—	23.4 (*b*)
China ..	.. 1939	2.6	27.8	40.2 (*c*)	3.4	5.2	20.8 (*d*)
Indo-China	.. 1938	1.1	35.2	9.6	7.6	5.3	41.2 (*e*)
Thailand ...	.. 1937-38	0.4	26.4	14.3	13.4	25.6	19.9 (*f*)
Malaya ..	.. 1938	(*g*)	34.4	12.0	25.6	6.6	21.4
Netherlands Indies	1938	0.7	30.7 (*h*)	2.9	46.7	9.4	9.6
Philippine Islands	1938	10.0	31.0	21.6	7.1	10.1	20.2 (*i*)
OCEANIA:							
Australia	.. 1938-39	2.6	72.8 (*j*)	4.9	4.3	4.8	10.6
New Zealand	.. 1939	11.6	77.2	(*g*)	(*g*)	4.9	6.2
THE AMERICAS:							
Canada ..	.. 1939	(*g*)	65.9 (*k*)	(*g*)	(*g*)	(*g*)	34.1
United States	.. 1938	27.0	34.5	4.0	3.6	10.5	20.4

(*a*) Includes 21.3%, tonnage of ships registered in the Kwantung Leased Territory. (*b*) Includes 8.6% Chinese and 3.6% Manchoukuoan. (*c*) Excludes vessels allegedly used for military purposes. (*d*) Includes 7.5% Chinese and 4.0% German. (*e*) Includes 25.5% French. (*f*) Includes 9.9% Danish and 6.0% Thai. (*g*) Included with "others." (*h*) United Kingdom only. (*i*) Includes 8.6% German. (*j*) Includes 4.9% Australian and 8.4% New Zealand. (*k*) Includes 24.0% Canadian. (*l*) Includes Atlantic as well as Pacific ports.

As hostilities progressed, the shipping situation gradually changed. In spite of the diminished commercial demand for space, shortages in the supply of bottoms became apparent in some trades, particularly those which the maritime powers had no direct interest in maintaining, Rates from Dairen and Bangkok to Europe displayed advances reminiscent of World War I. The inadequacy of ship space became more evident as the sinking of shipping increased and the effective carrying power of the remaining vessels was reduced by war conditions. War introduces its own demand for transportation facilities: first, for the importation of strategic materials and the exportation of goods to maintain foreign exchange balances. This constitutes a redirection of the commercial demand for shipping and does not present an entirely new demand. Secondly, there is the military and naval demand for

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*This table is based on material contained in the Transportation section of *An Economic Survey of the Pacific Area*, which is in the process of being published by the Secretariat, Institute of Pacific Relations. A note of caution should be introduced in regard to the interpretation of figures based on entrances and/or clearances. At best these figures show only in a very crude way the cargo-carrying capacity of vessels that have entered or cleared, but do not indicate whether the space available was utilized by shipments to or from the country indicated. They are used in this article, as elsewhere, because they are roughly reliable and are the only statistical evidence available for all the countries concerned.

troop transports, supply vessels for expeditionary forces and the fleet train, and auxiliary vessels of various types such as the well-known converted armed merchant cruisers.

Although deterioration in efficiency is much less obvious than the destruction of tonnage it is of equally great significance. Losses in efficiency are caused, among other things, by the time necessary to assemble ships for a convoy, reduction of speed of the faster vessels in the convoy to that of the slowest craft, congestion at ports caused by the arrival of a large number of ships at one time, destruction by bombing of harbor facilities and the means of transportation to the interior, and the necessity of using more circuitous routes.

The requirements of the Allies were being met in part by the purchase of old vessels from the laid-up fleet of the United States Maritime Commission which had been maintained for just such an emergency, and by the acquisition of other obsolete bottoms from private American shipowners who possessed considerable old tonnage in excess of normal trade requirements. This was especially true of operators in the United States intercoastal trade.

War Cripples Pacific Shipping

As a result, the advent of a critical shortage of tonnage in the Pacific was delayed, and it was not until the invasion of Denmark, Norway, the Netherlands and Belgium and the fall of France that a really dangerous scarcity of tonnage became imminent. Table II indicates the world's leading ship-owning nations. From this it can be seen that practically all of the world's tonnage is now controlled by strategic rather than strictly commercial considerations. A comparison of Table II with Table I will show the effect of the spring campaign of 1940 on Pacific shipping. Danish vessels are considered belligerents by the British because of Denmark's failure to resist invasion. As a result, Danish shipping has either been seized, is operating in the Baltic, or is tied up in neutral ports. The United States has taken protective custody of 36 Danish vessels and 32 Italian and German ships that have been in her ports. Legislation has been introduced to permit the United States Maritime Commission to operate this tonnage. Most Latin American countries have taken similar action.

TABLE II

APPROXIMATE SIZE OF WORLD'S STEAM AND MOTOR MERCHANT FLEETS BY FLAG AT BEGINNING OF 1939

(Lloyd's Register, 1939-40 Edition)

Flag	*Gross Tons (a)*	*Per cent of Total*
British Empire (excluding Great Lakes)	20,551,000 (*b*)	31.2
United States (excluding Great Lakes, but including Philippines)	9,039,000	13.8
Japan	5,630,000	8.6
Norway	4,833,000	7.4
Germany	4,483,000	6.9
Italy	3,425,000	5.2
Netherlands and Neth. Indies	2,970,000	4.6
France	2,934,000	4.5
Greece	1,781,000	2.7
Sweden	1,577,000	2.4
Russia	1,306,000	2.0
Denmark	1,175,000	1.8
Spain	902,000	1.4
Panama	718,000	1.1
Finland	590,000	.9
Brazil	485,000	.7
Yugoslavia	410,000	.6
Belgium	408,000	.6
Others	2,390,000	3.6
Total	65,607,000	100.0

(*a*) Includes all ships over 100 gross tons, as do the Admiralty reports on vessels lost.

(*b*) In March the British Admiralty acknowledged losses for the first 18 months of the war of over 5,000,000 gross tons of shipping belonging to themselves, their allies and to neutrals engaged in sailing to England. The Admiralty estimates Axis shipping losses at over 2,000,000 tons. No reliable information is available for ship construction for 1940, but it is doubtful if replacements exceeded 3,000,000 gross tons.

Norway, the fourth greatest maritime nation, many of whose ships operate in the Pacific, was involved next; and in turn the Netherlands and Belgium. Norwegian and Dutch shipowners established committees with headquarters in London and their vessels are now operating under the jurisdiction of the British Ministry of Shipping (This later became true of Greek shipping and some Yugoslav vessels as well). The activity of the French merchant marine has been circumscribed somewhat by the blockade, and the Italian merchant fleet was driven off the high seas upon that country's entry into the hostilities. About one half of the Swedish merchant tonnage is bottled up in the Baltic, but the remainder is operating in neutral trades throughout the world, a fair portion in the Pacific.

The invasion of Scandinavia and Holland involved the last sizable neutral tonnage, besides the American, that customarily operated in the Pacific trades. This accordingly became subject to withdrawal for more strategic requirements. This result, however, was not directly forthcoming so far as all of these countries were concerned, because Netherlands shipping remained in the Pacific to accommodate the needs of the Netherlands Indies, and the British permitted the Norwegians to remain in certain profitable and safe neutral routes as a reward for helping to supply Britain with other of their ships. The British, however, gradually withdrew more and more of their own tonnage from the Pacific for operation in the war zone. By March 15, 1941, only the cargo vessels of the Union Steamship Company of New Zealand remained to represent the British in the trans-Pacific trade from America to Australasia, and no British bottoms were reported to be running between America and the Orient. In fact it is estimated that over 60 per cent of all British overseas shipping operating to and from China had been withdrawn by the end of 1940; and in March English ships from Europe terminated their voyages to the Orient at Hongkong. Furthermore, the British Ministry of Shipping is attempting to withdraw more Norwegian vessels from other parts of this area, but will have to proceed cautiously in order not to endanger America's source of strategic supplies in the Far East.

American and Japanese Shipping Gains

The results of the above developments can be surmised from Table I, and are confirmed in part by Table III, which indicates in a rough way the effects on China—the only Far Eastern country, I believe, for which this information has been released for 1940. It will be noticed that the tonnage of vessels entering and clearing Chinese ports declined about 14 per cent in 1940 from 1939. Japanese participation increased, however, in absolute terms as well as relatively and accounted for 53.5 per cent of the tonnage in 1940 as compared with only 40.2 per cent in 1939. American tonnage figures almost doubled, demonstrating the re-establishment of the American merchant marine on the Pacific* as well as reflecting the transfer of vessels from the Atlantic because of the neutrality legislation.

Increases are also shown by the Netherlands, Greece and Panama. The Panamanian merchant marine is largely owned by United States interests but registered under the Panama flag in order to benefit from less rigorous restrictions. Since the outbreak of hostilities in Europe considerable American tonnage has been transferred to Panama registry to escape the neutrality legislation. The Norwegians and Chinese show a loss in absolute terms, but have maintained approximately the same relative position. The British, French, Italians and Danes all reveal substantial losses, while the German flag has entirely disappeared from Chinese ports. The Italian flag has no doubt suffered a similar eclipse since that country's entry into the war. It is impossible to tell how typical these results would be for other Far Eastern nations, but the trend indicated here is probably fairly universal.

TABLE III

TONNAGE AND PERCENTAGE OF TOTAL TONNAGE, BY NATIONALITY OF VESSELS ENTERING AND CLEARING CHINESE PORTS IN 1940 AND 1939

	1940		*1939*	
	Tonnage	*Percentage*	*Tonnage*	*Percentage*
Japanese (*a*)	13,736,000	53.5	11,994,000	40.2
British	4,438,000	17.3	8,300,000	27.8
American	1,472,000	5.7	769,000	2.6
Norwegian	1,273,000	5.0	1,550,000	5.2
Chinese junks	1,164,000	4.5	1,542,000	5.2

(*a*) Not including " military " shipping.

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*For a more detailed discussion of the decline in American shipping caused by the transfer from ocean-mail contracts to a direct subsidy system and other causes, consult the author's " American Shipping and the Sino-Japanese War," *Far Eastern Survey*, July 5, 1939.

	1940		*1939*	
	Tonnage	*Percentage*	*Tonnage*	*Percentage*
Netherlands	1,068,000	4.2	1,026,000	3.4
Chinese (excl. junks)..	648,000	2.5	684,000	2.3
French	521,000	2.0	803,000	2.7
Panamanian ..	351,000	1.4	107,000	.3
Greek	251,000	1.0	108,000	.4
Italian	199,000	.8	587,000	2.0
Danish	165,000	.6	699,000	2.3
Swedish	110,000	.4	207,000	.7
Portuguese	75,000	.3	61,000	.2
German	—	—	1,187,000	4.0
Others..	205,000	.8	205,000	.7
Total	25,676,000	100.00	29,828,000	100.00

Following the fall of France a concatenation of events, some of which have been described above, hastened the hitherto gradual disruption of Pacific shipping. The major new developments not previously discussed were : 1) the acceleration of the rearmament program in the United States, and the attendant accumulation of stockpiles of strategic raw materials, many of which, like tin, rubber, tungsten, chromium, manganese ore, quinine, etc. are shipped from the Pacific area ; 2) the disruption of normal routes of trade and a change in the importance of the various commodities traded. It is not possible to tell at this date whether the net effect of this change was such as to require more or less tonnage. A careful comparison of sailing distances, cargo-handling facilities and the stowage factor of commodities transported on the new and old trade routes would have to be made to obtain precise results. However, the immediate effect is likely to be a loss rather than an increase in efficiency. 3) The necessity of routing some ships around the Cape of Good Hope instead of via the Suez and Mediterranean as a result of Italy's entrance into the war is a major factor in causing longer sailing schedules.

The results of these new factors in conjunction with those already operating brought about a severe shortage of shipping in the Pacific by the winter of 1940, which threatened to become critical for all concerned by the following summer, and which has already become critical for some countries in the Pacific area. Japan will be considered first, because she is the greatest Far Eastern maritime power and the only major shipping nation whose vessels operate almost exclusively in Pacific trades. The China incident provoked a shipping shortage in Japan sooner than elsewhere. As a result, Japan has tried a variety of regulatory measures. As they indicate the nature of shipping problems now confronting other nations and possible solutions to these problems, these control measures will be reviewed.

Japan Institutes Controls

Shortly after the Chinese hostilities started, the Japanese Government found it necessary to regulate freight rates in the near-seas trade in order that ample tonnage would be available in the Japanese coastal and nearby foreign routes in addition to meeting the growing requirements of the army. As indicated previously, the Japanese did not want to spend more of their limited supply of foreign exchange than necessary for chartering foreign vessels, and at the same time did not wish to withdraw more vessels than necessary from remunerative overseas operations to meet the requirements of their military operations in China.

As a result, rate regulation was found insufficient to alleviate the shortage of ships in the near-seas area, and the next step was control over ship placement. This succeeded fairly well at first, but in the spring of 1940 the gradual withdrawal of European ships from Far Eastern trades presented Japan with a growing demand for ships if she wanted to fill these gaps. In view of restrictions on trading with many portions of the world, Japan abandoned services to Europe ; services to Africa and India were severely curtailed, while ships operating to the South Seas,* Malaya and in the coastal and nearby trades were increased. Services to Australia and North and South America were also increased. Larger imports from the west coast of South America to Japan led to further improvement of Japanese liner services on this run during the first quarter of 1941 ; on the other hand, service to the Antipodes was reduced somewhat.

The program of rate regulation and the control of ship placement, administered jointly by the government and a committee of shipowners, was found within a short time to be inadequate. Greater rationalization of ship operation was therefore adopted in September 1940. This new scheme provides for prohibition of free contracts, concentration of contract-making in a central organization, government control over placement of vessels by the newly-created Central Maritime Control Association, establishment of official freight and charter rates, pooling of accounts and distribution of revenue among shipowners (These latter two functions are to be performed by the Shipping Control Committee, an organization created in September 1939 to administer the rate control and placement program at that time). It is expected, however, that the creation of the Central Maritime Control Association and the reorganization of the Shipping Control Committee will give the Minister of Communications more power at the expense of the shipowners. Mr. Shozo Murata, former president of the Osaka Shosen Kaisha, Japan's second largest steamship company, was appointed to the Cabinet as Minister of Communications and Minister of Railways in July 1940. Mr. Murata described the new plan for control of shipping as a " liquidation of liberalism." The Ministry has control of wages and bonuses for Japanese seamen and of manning scales on Japanese vessels. It also has the authority to " requisition " labor for shipboard duty—a commentary on the shortage of mercantile seamen available.

Rationalization of Japanese Shipping

This rationalization of ship operation is intended to increase efficiency so that one ship will do the work now done by one and one half to two ships. Steps contemplated are : 1) to raise running loads above the regular load lines—i.e., overloading ; 2) to place vessels at different ports in accordance with stevedoring facilities available ; 3) to give more careful consideration to choosing the proper vessel for a particular voyage ; 4) to postpone docking for repairs.

Rationalization of vessel placements and of terminal operations may accomplish a good deal but overloading and delay in making repairs is both an expensive and dangerous policy. Japanese insurance companies and shipowners have objected to both of these measures ; but in spite of their protests, facilities for making minor repairs were denied Japanese vessels as early as last summer. In September, ministerial ordinances restricted nonurgent repairs. From August to November 1940, however, shipping tonnage docked for repairs increased by 80 per cent.

This brings us to the situation in Japanese shipyards, which launched 455,000 gross tons of shipping in 1937 and an equal amount in 1938. Many shortages, especially of skilled labor and steel, prevented an equal attainment for the subsequent two years. No official figures have been published since June 1939, when the shipbuilding program bogged down, but it is estimated that less than 400,000 tons were turned out in 1939. The cost of a medium-sized vessel has increased almost fourfold since the outbreak of the China affair ; and it now takes a year and three quarters to build a large-size ship that formerly required only ten months, a year to build a smaller vessel that used to require seven or eight months. The shipyards are on a priorities system for materials and are reported to be obtaining only half the steel they have requested.

In short, Japan does not possess sufficient tonnage, nor is she able to construct enough in the near future to satisfy her commercial and military ambitions simultaneously. Recent legislation and the drastic action contemplated indicate the severity of her problem.

Japan's Situation Serious

If it were not for the large military demand necessitated by the China incident Japan would be in a position to benefit commercially from the European conflict in much the same manner as she did in World War I. At that time, besides taking advantage of the disruption of European shipping to extend her own, Japan cleverly controlled freight rates to and from the Orient so as to favor her industries. Freight rates from Japan in that period increased only 20 per cent to 30 per cent, while rates from other points in the Orient increased considerably more. At the same time rates from the United States to the Orient rose 100 per cent to 300 per cent. In this way Japanese industries enjoyed at once protection in the form of high import rates, and a " bounty " in the form of low export rates. The situation is somewhat different at present because Japan has recently prevented a rate increase from the United States to the Orient from becoming applicable to Japanese ports. In the present instance she is trying to hold the price of imported goods down and prevent loss of exchange in the payment of freight bills to foreign carriers.

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*A major factor in this increase of Japanese shipping in the South Seas has been the new Japanese need to rely on rice imports from the rice surplus countries of southeastern Asia, Indo-China, Thailand and Burma. Because of geographical nearness and political conditions, Japanese rice ships have been routed preferably to Saigon rather than to Bangkok and Rangoon. In the current year, Thailand's rice export surplus has, moreover, been so small that now all rice exports from Thailand have been embargoed. The addition of tonnage requirements for one to one and a half million tons of rice has sharply increased the shipping " squeeze " in which Japan finds herself.

The United States is another leading maritime power situated on the Pacific but, Janus-like, facing both the Pacific and the Atlantic. Accordingly some cargoes from the Far East can move either across the Pacific and then overland or, what is more usual, via the Panama Canal ; or they can proceed in the opposite direction and be routed via Suez or the Cape of Good Hope. In either case the cargo may originate or terminate in the Pacific and, broadly speaking, thus involves Pacific shipping. Normally the dividing line which determines the shorter route for a ship to sail from the Far East to the Boston-New York-Baltimore-Norfolk range is an arc swinging from about Hongkong through western Australia. The Panama route is shorter for shipments from Hongkong eastwards—from China, the Philippines, Japan, Australia and New Zealand. Cargoes from Thailand, Malaya, the Netherlands Indies, Indo-China and, of course, India benefit by using the Suez route. Closing the Suez route shifts the whole zone benefiting from the Panama Canal further west, but a direct comparison is difficult because a balancing of longer steaming distance against the payment of the Panama Canal tolls is necessary, and the result will vary under different circumstances. When there is a scarcity of ships, however, almost anything that will reduce transit time is advantageous. Under prewar conditions much cargo moved by other than the shortest route. This is especially true of round-the-world services which pick up cargo at any port of call for delivery anywhere on the route.

Demands on American Shipping Increased

Upon the outbreak of the European war there was considerable concern over the " involuntary unemployment " of American shipping that was threatened by the forced withdrawal of ships from the European run required by the neutrality legislation. In a very short time, however, all vessels so affected, as well as those withdrawn subsequently as the war zone expanded, found new employment. Most of the tonnage involved was shifted either to the South American or Oriental trades. The disappearance of European flag tonnage from these waters made room for the shifted American vessels. In the Oriental trade American ships soon found not only the business vacated by foreign-flag tonnage, but also the increased tonnage demand for strategic materials required by the American rearmament and stockpile program. The sale to Britain of all available redundant vessels drained the American reservoir of reserve tonnage, so that by the end of 1940 a severe space shortage existed.

As the situation became more acute and the shortage of space more alarming, various steps were taken and many more contemplated to ameliorate the condition. Perhaps by the time this is published many of the programs under consideration will have been acted upon. The first step was to assign to the Oriental run new vessels constructed originally for the European service. This is still going on and several fast new ships have joined their elder sisters in trading with the Far East and Australasia. In addition, several new vessels planned for the Pacific trades have been added, and the vessels they were intended to replace have been kept in operation.

As a result, American services to the Orient have increased their facilities and are continuing to do so. In fact the net tonnage of American vessels that cleared American ports for the Far East (India, Malaya, China, Japan, Netherlands Indies, Philippine Islands, Siam, Indo-China and Siberia) was 61 per cent greater in January 1941 than it was in August 1939. American tonnage cleared for Australia and New Zealand increased 130 per cent for the same dates. This expansion of American shipping to the Antipodes has received additional stimulation in the past several months as a result of British-American negotiations to store 250 million pounds of Australian wool in the United States as an emergency reserve.

America Plans to Meet Emergency

Since these additional services have furnished only a partial solution of the problem, the United States Maritime Commission in March created a Division of Emergency Shipping whose primary duty is to make the most efficient use possible of available American flag tonnage. This division will maintain liaison with the Navy, War and State Departments, Reconstruction Finance Corporation, Office of Production Management and other government agencies concerned with the problem of ocean transportation. It will exercise the commission's authority over sales, charters, transfers, requisitions, etc. of vessels concerned with emergency transportation.

An ambitious shipbuilding program has also been inaugurated. Sixty vessels are being built in the United States by the British for their own account ; 200 ships are being constructed by the Maritime Commission in addition to their long-term ten-year plan for 500 ships ; and several hundred more are contemplated under the Lend-Lease Bill. The fruits of this program will take from nine months upward to mature, so more immediate action is contemplated.

Priorities for cargoes of certain types, rationalization of ship operation, and actual requisition of vessels are being considered. In fact priorities were instituted on cargo moving from the Netherlands Indies to the United States in April. Of the available shipping space, 60 per cent was reserved for tin and rubber. Priority was extended to bauxite ore and manganese ore, for the quantities contracted. Shipments of Java tobacco, coconut oil, quinine (cinchona) bark, kapok-seed oil, pepper and paraffin have been postponed, while restricted transportation is accorded other commodities. Similar measures by the Dutch authorities affecting Dutch ships have assisted the Netherlands Indian program.

Rationalization is also being considered and, as in the case of the Japanese, may produce substantial economies. One of the first measures has been the utilization of army transport ships carrying men and supplies to the Philippines, for the transportation of commercial cargoes, especially rubber, on the return voyage. A more spectacular proposal has been to route all ships possible from the Orient to the Pacific coast, transhipping the cargoes overland by rail to eastern manufacturing centers, thereby shortening the distance to be travelled by ships which otherwise would go through the Panama Canal to Gulf and Atlantic coast ports. This would parallel the Japanese shift of raw silk from the Panama Canal route to transcontinental rail lines, and their refusal to send their tankers through the Canal for petroleum cargoes. Although Mr. Ralph Budd, Transportation Commissioner of the Council of National Defense has stated that the railroads are adequate to handle all business they may get, it is possible that the transcontinental routes may become a bottleneck if the above proposal should be carried out and if, in addition, the bulk of the intercoastal fleet should be requisitioned for overseas service.

Land *versus* Water Transport

Besides the increased traffic in general that has been caused by the defense boom, transcontinental carriers are already being called on to carry what is left of the business from the Pacific coast of the United States and Canada to Britain, because almost all of the ships that formerly served this trade have been withdrawn in favor of the shorter Atlantic crossing. In addition these railroads will be required to carry increased quantities of lumber and of strategic minerals available on the Pacific coast such as mercury, tungsten and chromium. The Maritime Commission may requisition ships of the intercoastal service as well as carriers operating in the foreign services, and this would probably involve a further subordination of purely commercial considerations to military and strategeo-commercial requirements.

The United States has sufficient tonnage to import currently needed strategic materials from the Far East once the effort to accumulate stockpiles is accomplished, barring complications such as the involvement of Japan as a belligerent member of the Axis. Such an eventuality would require the use of convoys, which are less efficient and may require the routing of more vessels via the Cape of Good Hope. A definite shortage of tonnage exists, however, for carrying commodities the importation of which is not imperative for the United States, but for which the loss of the American market would be a severe blow to the economy of the exporting country. An example is Philippine sugar. It is estimated that 230,000 tons out of her duty-free quota of 850,000 long tons may not be able to find transportation. The preservation of Philippine sugar economy may be as important to the United States as the acquisition of chrome, rubber and tin ; therefore the strategeo-commercial requirements for shipping may prove embarrassing.

No further analysis of the American shipping situation can be made without reference to the demands of the British, which are indefinitely large. It is quite possible that the solution will be in the formation of an Allied Shipping Control Committee such as existed at the close of the last war.

The worst effects of the pinch are being experienced by the independent nations which lack an appreciable quantity of shipping of their own. Thailand was one of the first to feel the effects. Shortly after the invasion of Denmark and Norway, whose ships were so important to Thai commerce, the Thai Maritime Navigation Company was formed by government officials and purchased several old freighters to carry Siamese exports and imports. As a result of the last war Thailand was forced to carry as much as 24 per cent of her own waterborne commerce. Normally she accommodates less than six per cent of her own shipments.

The Philippines began building up a merchant marine two years ago, but has not achieved any appreciable degree of independence, and in 1940 carried only 1.67 per cent of its own commerce. The rate on sugar from Manila to United States Atlantic ports, which was approximately $12 per short ton in September 1939, rose to $15 in 1940 ; to $17 in January and to $18 by March. The shipping shortage has been instrumental in the decline in price of Philippine sugar which fell from P.5.90 per picul in December 1939 to P.5.00 in February, 1941.

China, in addition to her other woes, is also suffering from the lack of shipping. This situation has led to speculation by some Chinese importers, which in turn has aggravated the demand for space as stocks of imported goods are accumulated in anticipation of an increase in prices. Shortage of shipping space to supply coal needed for the maintenance of industrial operations in Shanghai is very serious at present.

Sorry Outlook for Pacific Shipping

The withdrawal of foreign tonnage and the inability of Japan to take care of all the business relinquished have made the situation very serious. Interference by Japanese authorities with European vessels which have remained in the China coasting trade has disrupted domestic water transportation, because the British formerly handled 50 per cent of this business.

The Soviet Union remains enigmatic because of the paucity of information available. Approximately 25 per cent of the Soviet merchant fleet of over 650 vessels of 1,370,000 tons is reported to be in the Far Eastern trade. Sailings from Vladivostok to Seattle were begun in September 1940 in what was reported to be the beginning of a new regular service. In March, seven Russian vessels were being reconditioned in Shanghai yards and it is expected that they will operate in the Vladivostok-Far East trade.

The prospects for the immediate future are that the supply of ships will be reduced by sinkings faster than replacements can be constructed. The demand for space in the Pacific area will continue to exceed the available supply with the result that additional control measures will be exercised on the operation and placement of ships, on the rates charged and on the commodities permitted to move. The military and strategeo-commercial requirements of the maritime powers will receive first consideration and these needs alone will probably require all available tonnage. Merchant vessels of nations remaining neutral will probably be forced to operate for those nations whose naval and air power controls the seas in which they sail. In short, the shipping crisis will probably continue as long as hostilities are being carried out on a large scale. The immediate prospect is that the situation will get worse at least until replacements are made at a faster rate than sinkings. This took over two years in World War I.

Pacific Factors for Washington to Weigh

(Continued from page 189)

offensive action against America proper has never existed except in the minds of alarmists, but a revitalized Chinese Army will not enable the United States to withdraw its Pacific Fleet or Britain to reduce the strength of its Singapore and other Far Eastern garrisons. Thus, aid to China is no solution to Anglo-American problems.

The fact remains that from a strategic standpoint, Japan can wreak considerable havoc on the Far Eastern interests and possessions of Britain and the United States in even a hit-and-run sort of war, and the entry of a potent power on the Axis side along a new war front is not only undesirable but dangerous. A non-belligerent but unfriendly Japan, which immobilizes a great fleet, a vast army and hundreds of warplanes urgently needed on other fronts, is scarcely less effective than a Japan at war in crippling the Anglo-American effort against Germany.

Back in September, 1939, Japan proclaimed, a policy of strict neutrality regarding the European war, emphasizing this by discontinuing negotiations which had been proceeding for formal entry into the Axis. A year later Japan reversed her stand and threw her lot in completely with Germany and Italy. Now the policy seems to be veering back to one of practical neutrality, playing both sides against each other in much the same fashion as Soviet Russia has been doing so profitably. This last course is not yet clearly defined, but hints of willingness to be conciliatory, and anxiety to escape belligerency so apparent in recent developments point to the birth of a new policy.

As the situation in Europe becomes increasingly difficult and America crowds ever closer to the brink of war, it becomes more obvious that a continued Pacific stalemate is less disadvantageous to Japan than it is to Britain and America. A realistic survey of the situation reveals this, but of course it is not apparent to such belligerent talkers as U.S. Senator Claude Pepper who with great disregard for military limitations would wipe Japan off the map first before cleaning up on Germany.

It is unfortunate that Japan by adopting a show of truculence and talking tough when the occasion demands, or perhaps when Berlin urges, can keep a secondary matter in the spotlight together with the main issue of destroying Nazism. The trouble can be remedied by comparatively simple measures which demand no more back-pedaling or compromise with ideals than has been involved in previous American efforts to reorient an untenable policy, and which definitely need not mean abandoning China.

Common sense demands that a settlement be reached with Japan, a settlement which large elements in Japan openly desire and which has been hinted at officially. In moments of idealism, Americans have expressed their desire to win converts for the democratic cause away from what is called the darkness of totalitarianism. Here is an opportunity, not only to gain a friend, but to stabilize half a hemisphere containing a third of the human race.

It is a challenge to American diplomacy which has slowly swung from passive censure of aggression to leadership in marshalling the forces of progress. It is a ready-made opportunity to defeat Germany at her own game of employing diplomacy as a weapon of war. The stakes are large enough to justify a wild gamble, but this step involves only courage and the sort of practicality that is associated with vision. Sometimes in the East, false pride drives a man to disaster rather than lose " face " by admitting and correcting an error. That is a phenomena not exclusive to the East.

Nanking-Tokyo Air Route

Regular air service between Nanking and Tokyo has been inaugurated by the Dai Nippon Airways Company. Hitherto Shanghai had been the terminus of China-bound planes of the Dai Nippon Airways, the Shanghai-Nanking service being maintained by the China Aviation Company.

The trip between the two cities will take seven hours with one plane each leaving Tokyo and Nanking daily. Between Fukuoka and Nanking, a Douglas 21-seater plane will be used, while the Fukuoka-Tokyo trip will be made by a Mitsubishi MC-20 11-seater plane.

The Japan-bound planes will leave Nanking each morning at 8 o'clock arriving at Shanghai at 9 o'clock and Fukuoka at 12.50 o'clock in the afternoon. A change in planes will be made at Fukuoka and passengers will arrive at Tokyo at 5.30 o'clock.

The Nanking-bound planes will leave Tokyo at 6.30 o'clock each morning and arrive at Fukuoka at 13. From Fukuoka the Douglas will arrive at Shanghai at 2.30 o'clock in the afternoon, and at Nanking at 4 o'clock.

Central China Development Company Reports Profits

By *DAVID S. SMITH*

BUSINESS condition of the Central China Development Company during the past six months under review has been greatly improved when compared with the previous year according to statistics released by the various subsidiary companies. For instance, the Central China Electricity and Waterworks Company, the Central China Railway Company and the Greater Shanghai Gas Company, who paid no dividend during the year of 1939-1940 have found it possible to pay dividends in the six month period from November 1, 1940 to April 30, 1941. In the following paragraphs, a comparative study of the business condition of the thirteen subsidiary companies of the Central China Development Company will be made.

Central China Salt Company

In 1939, the Central China Salt Company sustained a loss of Y47,669 but in 1940 (November 1, 1939 to October 31, 1940), the company made a profit of Y532,030. Deducting the loss of the previous year, the company made a net profit of Y484,360 in 1940. In the past six months from November 1, 1940 to April 30, 1941, the company made a profit of Y281,691, which is more than the company made in six months during the previous year. If the company will make as much as Y281,691 in the next six months, it will have a total profit of Y562,382 and if compared with that of the previous year, it will represent an increase of Y30,352.

The following table gives the profit and loss account of the company for the period from November 1, 1940 to April 30, 1941 :

Net profit	Y281,691.00
Carried forward	158,360.90
Total	Y440,051.90
Reserve	50,000.00
Special reserve	25,000.00
Pension to staff members	25,000.00
Bonus to staff members	14,000.00
Dividend—10 per cent	62,500.00
Carried over to next period	263,551.90

In this connection, it is interesting to note that in the past year, the company paid a dividend of eight per cent but in the past six-month period, it paid a dividend of ten per cent.

Central China Mining Company

From November 1, 1939 to October 31, 1940, the Central China Mining Company made a profit of Y1,282,225.43 but in the six months from November 1, 1940 to April 30, 1941, the company made a profit of Y684,874.28 which is again more than the company made in six months during the year 1939 to 1940. As usual, the company paid a dividend of eight per cent to the special shareholders (those who subscribed the shares in cash) and two per cent to the ordinary shareholders (those who subscribed the shares in kind). The following table gives the details of the distribution of the profit of the company for the six month period :

Net profit	Y684,874.28
Carried forward	37,718.42
Total	Y722,592.70
Reserve	70,000.00
Pension to staff members	60,000.00
Bonus to staff members	40,000.00
Special reserve	30,000.00
Dividend	469,997.72
Carried over	42,594.98

Central China Railway Company

During the year from April 1, 1940 to March 31, 1941, the Central China Railway Company, made a profit of Y6,054,389.56. The following table gives the detailed account of the business situation :

Profit	Y6,054,389.56
Losses of last year	2,495,623.04
Total	Y3,558,766.52
Reserve	310,000.00
Pension of staff members	600,000.00
Bonus to staff members	67,000.00
Dividend at 5 per cent	1,360,000.00
Special reserve	600,000.00
Carried over to next year	620,948.18

During the year, the company had a total income of Y59,587,842.83.

Hweinan Coal Mining Company

In the six-month period from April 1, to September 30, 1940, the Hweinan Coal Mining Company made a profit of Y345,753.00 but in the six month period from October 1, 1940 to March 31, 1941, it made a profit of Y853,632.43 or an increase of Y507,879.43. In the past six-month period a dividend of six per cent was paid to the shareholders but during the present period under review, the dividend to be paid to the shareholders will be eight per cent. The following table gives the details of the business condition of the company for the period from October 1, 1940 to March 31, 1941 :

Net profit	Y853,632.43
Carried forward	83,546.81
Total	Y937,179.24
Reserve	100,000.00
Special reserve	100,000.00
Pension to staff members	60,000.00
Bonus to staff members	30,000.00
Dividend at 8 per cent	387,000.00
Carried over	260,179.24

Central China Electricity and Waterworks Company

From November 1, 1939 to April 30, 1940, the Central China Electricity and Waterworks Company sustained a loss of Y376,070.00 but in the period from May 1 to October 31, 1940, it made a profit of Y1,199,370.00. Deducting the loss, the company had on October 31, 1940 a profit of Y823,290.00 and paid no dividend to the shareholders. During the past six months under review from November 1, 1940 to April 30, 1941, the company made a profit of Y1,333,342.56 which is also more than the profit for the previous six-month period. A dividend of five per cent will be paid to shareholders for this period as shown in the following table :

Net profit	Y1,333,342.56
Carried forward from last period	675,298.96
Total	Y2,008,641.52
Reserve	200,000.00
Special reserve	300,000.00
Pension to staff members	100,000.00
Bonus to staff members	27,000.00
Dividend at 5 per cent	607,930.13
Carried over to next period	773,711.39

In referring to this company, it is important to note that it operates at present 16 power plants and nine waterworks in different cities of Central China. In March, 1941, these 16 power plants supplied electric light to 100,366 households or an increase of 948 households when compared with the previous month. The 16 plants generated a total of 25,361,059 kwh. of electricity in March. The following table gives the amount of electricity generated by the different plants now operated by the company :

	Electricity in kwh.
Shanghai Power Plant	11,095,222 kwh.
Nanking	3,850,080
Chishuyen	3,278,400
Wuching	376,900
Hankow	2,683,150
Hangchow	861,450
Chinkiang	630,850
Yangchow	220,800
Kashing	62,319
Sunkiang	13,720
Soochow	1,671,900
Anking	87,870
Kiukiang	47,130
Wuchang	7,819
Lushan	1,871

The nine waterworks operated by the company supplied in March water to 32,786 households, or a decrease of 7,155 households from the previous month. Total amount of water supplied during the month was 4,551,274 cubic meters or a decrease of 333,459 cubic meters when compared with the previous month. The following table gives the amount of water supplied by the different waterworks :

	Water in cubic meters
Shanghai North	695,010
Nantao	924,240
Pootung	28,280
Hangchow	116,686
Chinkiang	104,850
Nanking	896,678
Wuhu	7,259
Hankow	1,710,113
Wuchang	68,238
Total	4,551,274

Central China Telecommunications Company

The Central China Telecommunication Company which controls and operates all the telephone and telegraph companies in the occupied areas of Central China made a net profit of Y2,144,293.83 in the year from November 1, 1939 to October 31, 1940. During the six-month period from November 1, 1940 to April 30, 1941, the company made a profit of Y834,036.44. The important achievements of the company during the period under review are: (1) purchase of the Wusih Telephone Company on January 6, 1941, (2) opening of telephone service between Nanking and Hsuchow on January 8, 1941, (3) conclusion of a radio-telephone agreement with the Thailand Telephone Company on March 7, 1941, and (4) conclusion of a radio-telephone agreement with the Manchurian Telephone Company.

The following table gives the details of the business condition of the company during the past six-month period :

Net profit	Y834,036.44
Carried forward	381,918.57
Total	Y1,215,955.01
Reserve	90,000.00
Special reserve	200,000.00
Pension to staff members	50,000.00
Bonus to staff members	30,000.00
Dividend at 6 per cent	375,000.00
Carried over to next period	470,955.01

Shanghai Inland Water Navigation Company

In the six-month period from November 1, 1940 to April 30, 1941, the Shanghai Inland Water Navigation Company made a profit of Y108,753.04 and the company will pay a dividend of ten per cent to its shareholders. In this connection, it may be recalled that the company during the past year from November 1, 1939 to October 31, 1940, made a profit of Y200,410.38. If in the next six months, the company can make as much profit as in the past six months, it will make a little more profit in the year from November 1, 1940 to October, 1941 than the corresponding period from 1939 to 1940. The profits for this period is distributed as follows :

Net Profit	Y108,753.04
Carried forward	10,327.11
Total	Y119,080.15
Reserve	10,900.00
Pension to staff members	13,000.00
Bonus to staff members	5,000.00
Dividend at 10 per cent	67,513.35
Special Reserve	10,000.00
Carried over to next period	12,666.80

In April, 1941, the company transported a total of 118,903 tons of freight or an increase of 6,623 tons when compared with that of March. As to passengers, the company transported 368,167 for the month or a decrease of 24,729 for the previous month. The following table gives the quantity of freight as well as the number of passengers transported by ships of the company in the month of April along different lines of the company :

(1) SOOCHOW CREEK :	
Freight transported	41,771 tons
Passengers carried	41,332
(2) WHANGPO RIVER :	
Freight transported	23,254 tons
Passengers carried	119,368
(3) YANGTZE RIVER :	
Freight transported	17,290 tons
Passengers carried	233,939
(4) HWEI HO :	
Freight transported	29,850 tons
Passengers carried	40,220
(5) BETWEEN OFFICES OF THE COMPANY :	
Freight transported	6,738 tons
Passengers carried	33,218

Central China Bus Company

The Central China Bus Company made a profit of Y110,365.65 in the year from November 1, 1939 to October 31, 1940. From November 1, 1940 to April 30, a period of six months, the company made a profit of Y84,066.50. If the company can make another sum of Y84,066.50, its total profit for the current year will be much more than that of the previous year. During this period a dividend of six per cent will be paid to the shareholders as shown in the following :

Net Profit	Y84,066.50
Carried forward	15,015.42
Total	Y99,081.92
Reserve	13,500.00
Pension to staff members	12,000.00
Bonus to staff members	4,200.00
Dividend at 6 per cent	52,582.30
Carried over to next period	16,799.62

The business condition of the company at the present time is summarized in the following table :

SHANGHAI	Length of bus lines—137.4 kilometers Distance traveled during year—2,409,014 kilometers Passengers transported—11,472,975
NANKING	Length of bus lines—26.7 kilometers Distance traveled—713,791 kilometers Passengers—2,150,775
HANGCHOW	Length of bus line—128.2 kilometers Distance traveled—118,886 kilometers Passengers—243,602
SOOCHOW	Length of bus line—17.7 kilometers Distance traveled—70.380 kilometers Passengers—1,102,882
CHINKIANG	Length of bus lines—58 kilometers Distance traveled—70,380 kilometers Passengers—111,739
WUSIH	Length of bus lines—9.7 kilometers Distance traveled—56,964 kilometers Passengers—151,056
NANKING	Length of bus lines—23.9 kilometers Distance traveled—106,354 kilometers Passengers—127,215
TOTAL	Length of bus lines—3,116 kilometers Distance traveled—3,676,605 kilometers Passengers—15,360,244

Chung Hwa Shipping Company

Since its establishment in February, 1940, the Chung Hwa Shipping Company made a total profit of Y137,242.77 up to September 30, 1940. From October 1, 1940 to March 31, 1941, the company made a profit of Y107,019.90. No dividend was paid during the past year and no dividend will be paid for the present six-month period, according to a decision of the shareholders of the company. The following table gives a full account of the business of the company :

Profit	Y107,019.90
Carried forward	112,242.77
Total	239,262.67
Reserve	30,000.00
Pension to staff members	10,000.00
Carried over to next period	199,262.67

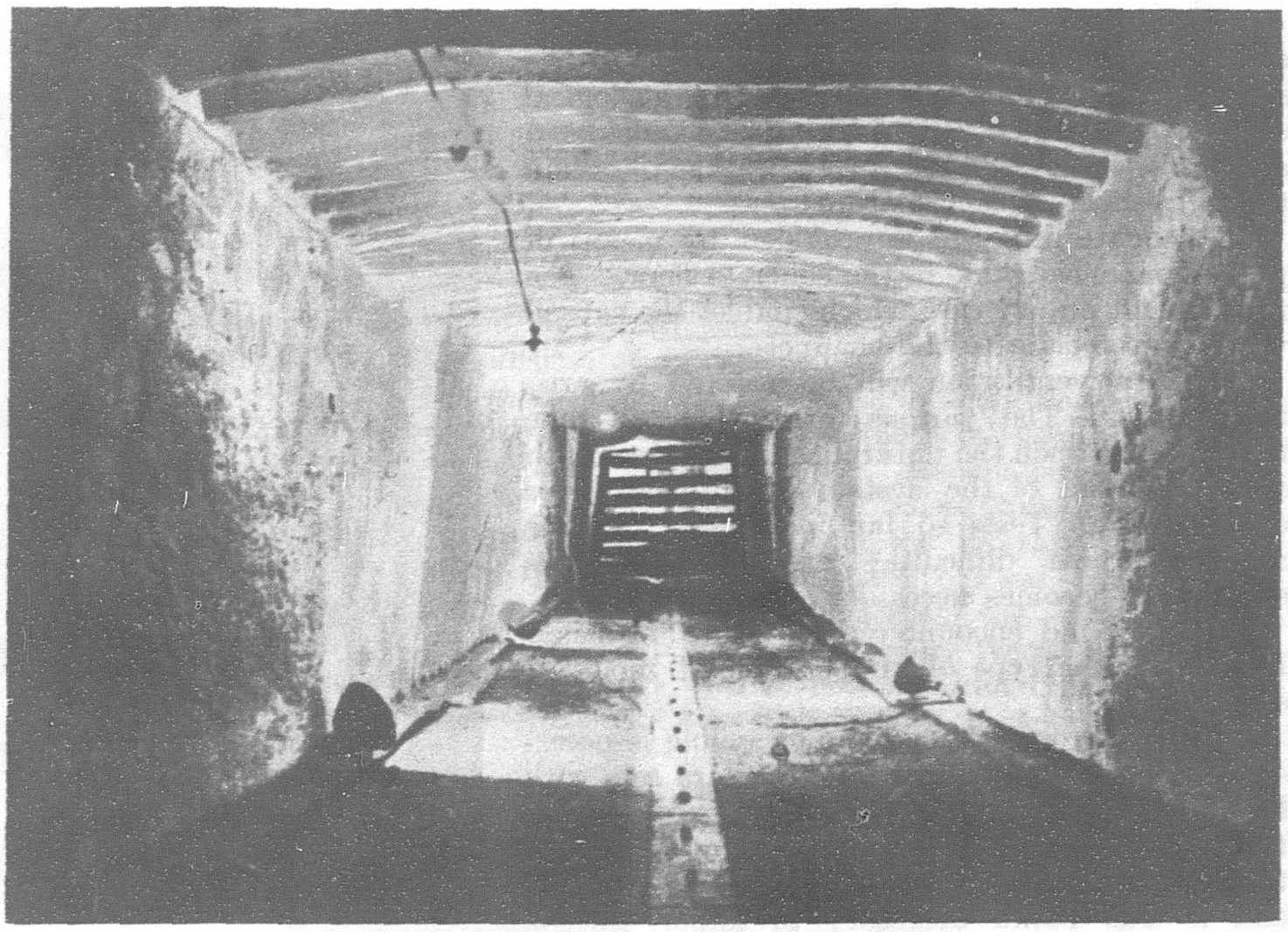
Greater Shanghai Gas Company

The Greater Shanghai Gas Company paid no dividend before. But this year as a result of exceedingly good business, the company will pay a dividend for the first time amounting to six per cent.

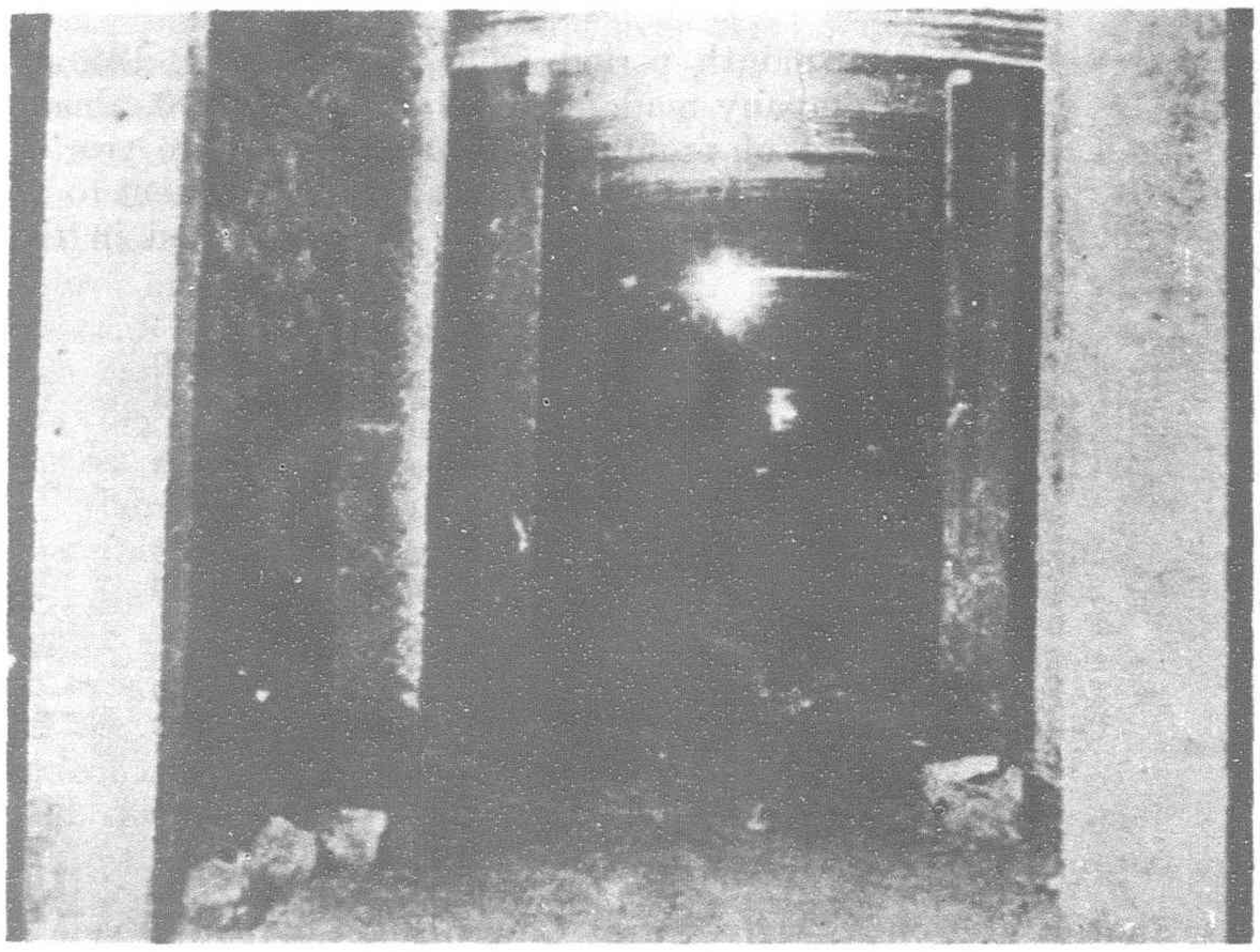
(Continued on page 198)

Engineering Details of Air Raid Shelters Built in Hongkong

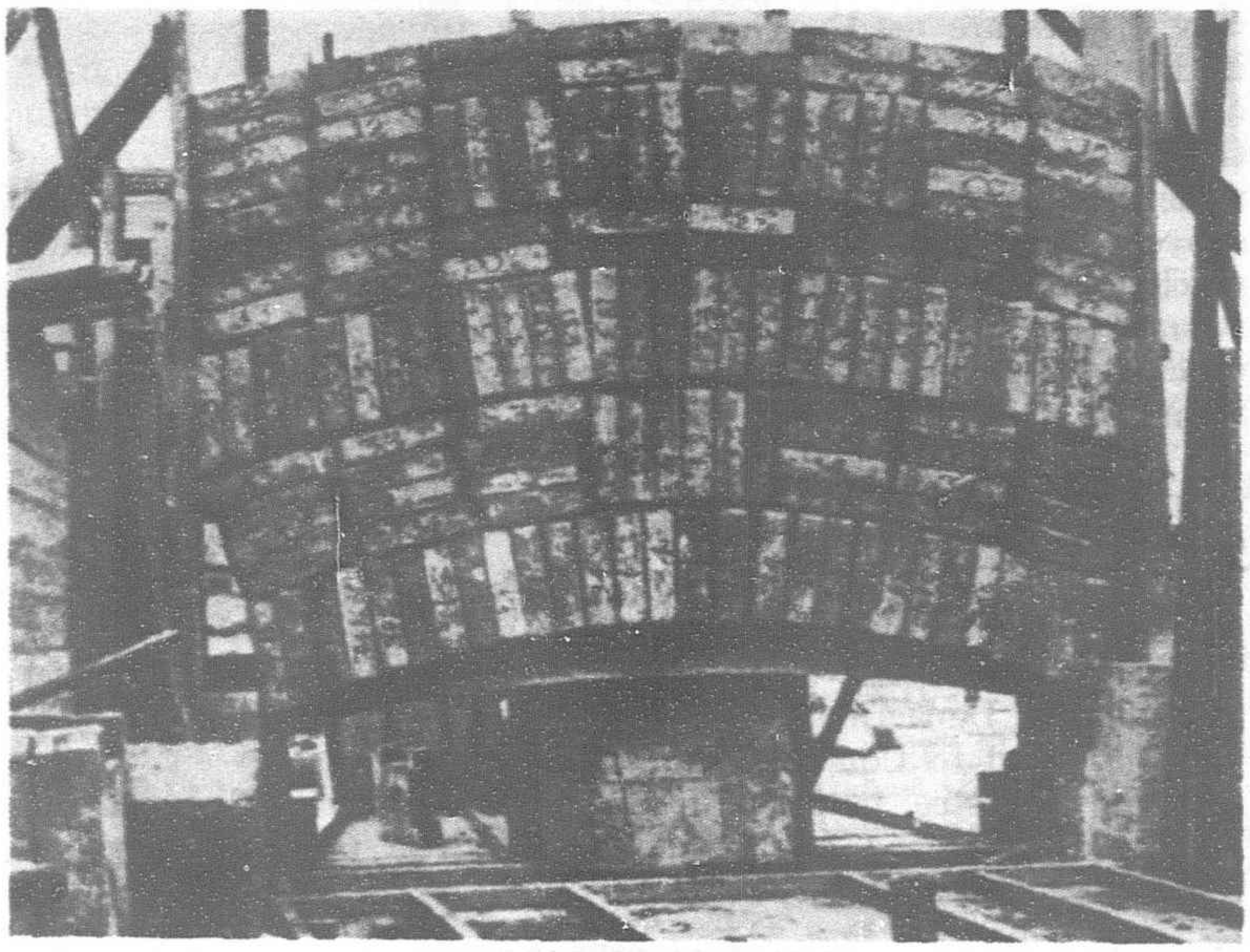
Public air raid shelters of deep tunnel type, such as are being constructed by Marsman Hongkong China Ltd. for the Government of Hongkong, are designed to provide full protection against heavy bombs throughout their full length except for the short lengths immediately adjoining the portals where sufficient cover is not obtainable.



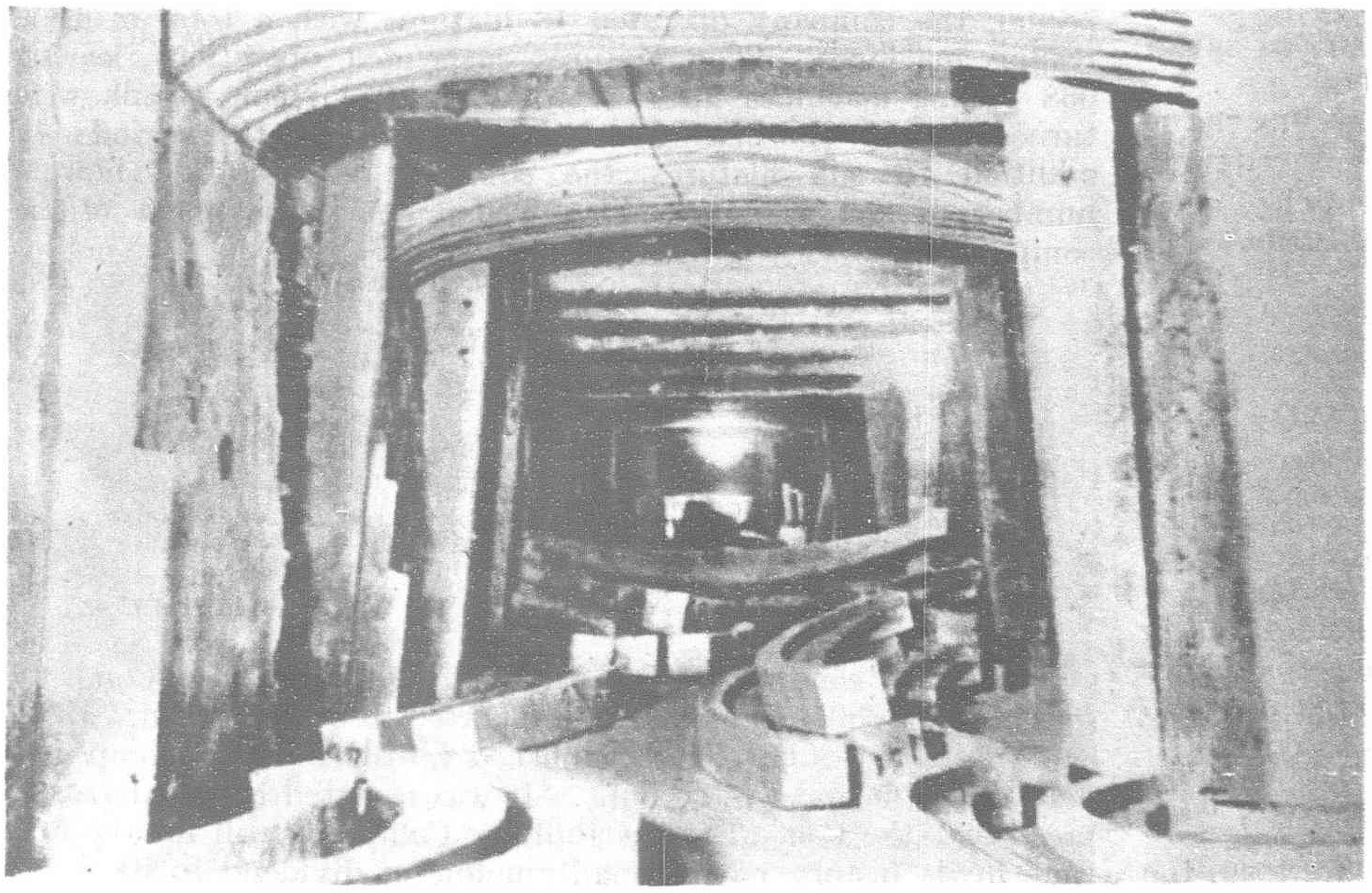
Completed section of tunnel lined with rubble walls, concrete floor and T-beam roof



An intermediate stage in lining the tunnels; wood shoring about ready to be removed



One of the many tests carried out on precast roof beams before final design was chosen

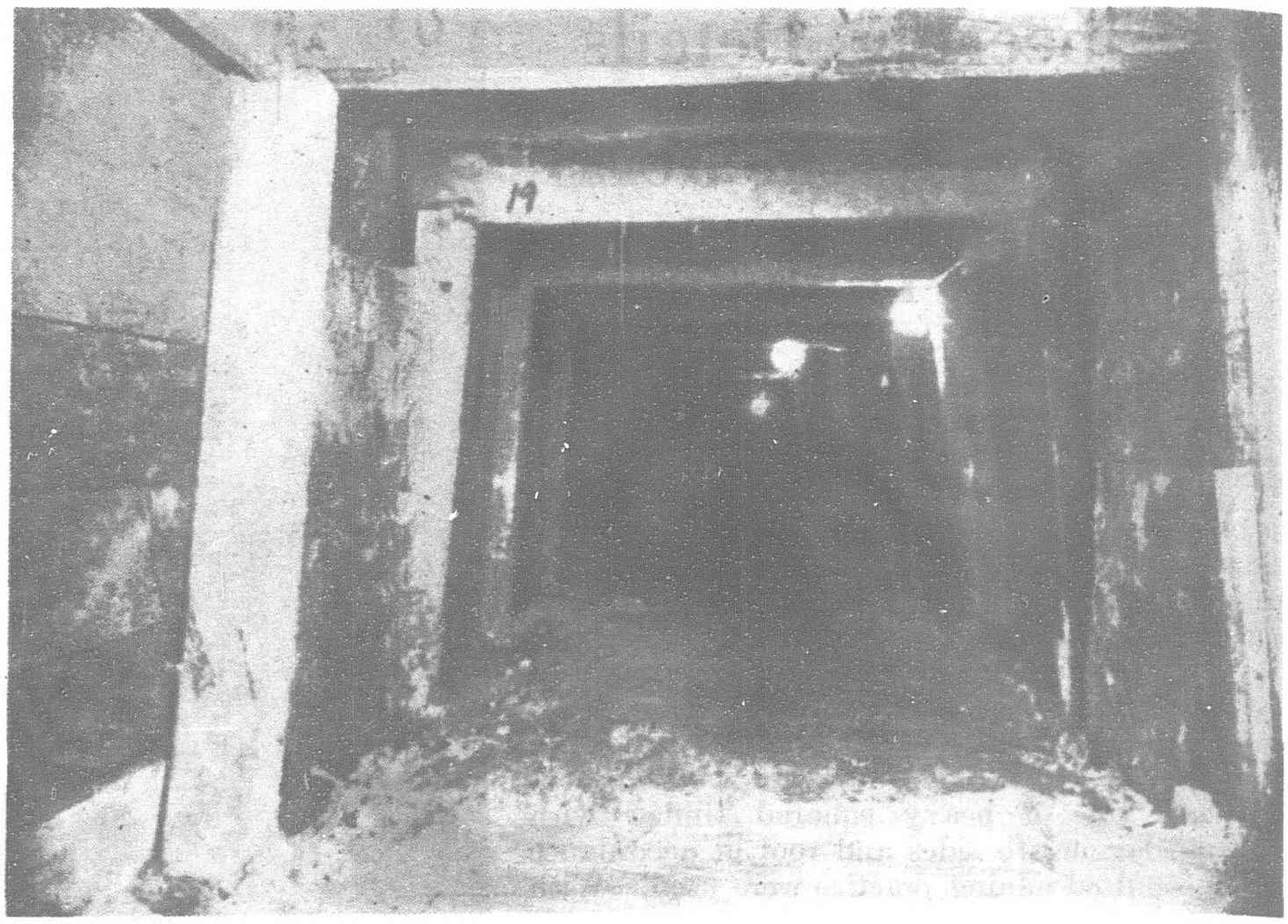


Further stages in completion of tunnels; arch beams being set in place between sections of the timber shoring

The peculiar geological and topographical feature of Hongkong together with the material to be obtained locally were governing factors in deciding the type of tunnel to be adopted. Standard sets of heavy squared timber with timbered lagging to sides and roof in accordance with recognized mining practice were used. With this method and with the aid of compressor plant and mechanical appliances it was possible to make the maximum progress in the development of the respective sites. On completion of the layout a progressive program of replacement of the timber by a permanent form of lining is undertaken. This is being economically carried out by utilizing the stone taken out of the tunnels driven in rock and the timber removed is reused in driving new headings. The permanent lining not only increases the strength of the shelter but assists drainage and ventilation and increases the cross sectional area and consequently the accommodation.

The type of precast arch beams being used for the tunnel roof was decided upon only after extensive tests on a number of different designs had been carried out. These designs included various shapes of T-beams and arches and the type finally chosen represents the most satisfactory combination of strength and economy.

The number of entrances are laid off to conform with recommendations of the A.R.P. Department in England and will permit of 800 people passing through each portal in four minutes. The portal entrances will be protected by blast curtains formed by concrete blocks.



Showing first stage in lining the tunnels, timber wall lagging is being replaced by rubble stone walls

The tunnels are so located that they provide shelter for the greatest number of people in the shortest possible time. At the same time geological and topographical features have to be considered and tunnels are placed in such a way as to obtain the full benefit of such features.

Adequate drainage is provided by means of precast channels sunk in the concrete floor. The floor is laid on dry core which enables the subsoil water to percolate to the channels.

Natural ventilation will be assisted by artificial means. The various forms this will take is dependent upon the natural conditions met with and the extent of the system of tunnels under consideration. Tests so far undertaken indicate no insuperable difficulties even if continuous occupation becomes necessary.

The ground encountered in tunnelling has a bearing on the type of timbering and mode of excavation.

In soft ground fore-poling or spiling is necessary, in medium ground straight square sets with lagging are sufficient, while in the hard ground timbering is not necessary. In Hongkong, all these types of ground have so far been encountered and it was found necessary to import special machinery from Manila to meet all these requirements. For soft and medium grounds pneumatic clay diggers are used. These machines are new in Hongkong but have been used on New York tunnels to great advantage. They increase the efficiency of labor to such an extent that two men can now provide all the earth necessary to keep the mine cars filled as against a gang of eight men with picks and shovels. For hard rock, jackhammers and drifters are used. These machines are very effective and give a rate of progress up to twenty times as fast as hand drilling with sledge hammers. This special equipment requires skilled labor which has been obtained from the Colony and from Manila.

The rate at which accommodation is being provided varies from five to seven hundred people per day dependent upon the difficulties encountered.

The work of tunnel construction is executed under the direction of the Public Works Department by the Mining Department of Marsman Hongkong China Ltd. in collaboration with their Engineering Department. The work of casting the arch beams was entrusted to Concrete Products Ltd.

The drill steel used for drilling in rock is an English product being Edgar Allen's 7/8-in. Hollow Drill Steel purchased through Jardine Engineering Corp. Ltd.

Central China Development Company Reports Profits

(Continued from page 196)

The company in the past six months made a profit of Y68,766.72 but in the previous period, it sustained a loss of Y23,011.58. Deducting this loss from the profit account, the company had a net profit of Y45,755.14. This amount of profit will be distributed in the following manner :

Profit	Y68,766.72
Loss of last period	23,011.58
Net profit	45,755.14
Reserve	10,000.00
Pension to staff members	3,000.00
Bonus to staff members	2,000.00
Dividend at 6 per cent	22,339.72
Carried over to next period..	8,415.42

At present, the company supplies gas to 698 households in Shanghai and total amount of gas supplied during the period under review was 54,846 cubic meters. The company turned out also 1,974 tons of coke and 74 tons of coal-tar during the period.

Central China Marine Products Company

In the year from November 1, 1939 to October 31, 1940, the Central China Marine Products Company made a profit of Y722,245.36 and in the six-month period from November 1, 1940 to April 30, 1941, the company made a profit of Y722,195.00, almost as much as the amount of profit made during the entire year of 1939 to 1940. The company paid a dividend of ten per cent to its shareholders and the remaining sum will be distributed in the following manner :

Profit	Y722,195.00
Carried forward	284,270.83
Total	Y1,006,465.83
Reserve	73,000.00
Special reserve	300,000.00
Pension to staff members	37,000.00
Bonus to staff members	15,000.00
Dividend at 10 per cent	132,930.00
Carried over to next period..	448,535.83

Central China Silk Company

In the past year, the Central China Silk Company made a profit Y2,913,098.50 but during the past six months (despite the general poor business condition of silk industry), the company managed to make a profit of Y1,313,851.23. During the six-month period, the company operated 18 filatures with a total of 6,006 reeling machines. Four filatures suspended operations, leaving 968 reeling machines idle. A total of 4,963 piculs of silk were turned out by the filatures of the company in the period. In addition to silk filatures, the company is operating now a number of silk weaving mills. The financial statement of the company follows :

Profit	Y1,313,851.23
Carried forward	829,574.56
Total	Y2,143,425.79
Reserve	300,000.00
Pension to staff members	200,000.00
Bonus to staff members	30,000.00
Dividend at 10 per cent	468,903.00
Carried over to next period..	1,144,522.79

Business conditions of the Shanghai Real Estate Company during the six month period were reported to be very good. However, no statistics have been published yet regarding the company's detailed profit and loss account. It was reported by the Japanese press that the Central China Railway Company, will for the first time in its history pay a small amount of dividend to its shareholders.

Wartime in Beautiful Hangchow

By *W. H.* BROOK

A THOUSAND feet below us lie the neat geometric patterns of sun-drenched Chinese rice paddies, corn fields, young cotton patches, stands of grain. To our rear, on the north side of the muddy Tsien Tang Kiang and faint in the distance are the hills of Hangchow, Chekiang Province, with the dim outline of the Needle Pagoda above famed West Lake standing like a marker in the confusing jumble of hills and valleys. And in front of us, perhaps ten miles across the broad green valley are the brush-covered crags held by the "enemy."

The "enemy" in this case are the Chinese Chungking forces of which no signs are visible, even through binoculars. But our guide for the occasion, Sub-Lieutenant Saito, assures us that they are there, even as they had once occupied the very outpost on which we stand.

The early summer sun is hot on our backs and the breeze whipping over the thousand-foot peak is refreshing after the stiff climb at military gait up a tortuous path. But there is no wind in the valley below, and the water in the paddies is without a ripple, reflecting mirror-like the fleecy clouds. It is a peaceful scene that stretches as far as one can see—junks in the canal, men crawling over the thin strip of road, tiny figures in the fields—and the squalor of Chinese peasant life is blissfully obliterated by distance.

But this is a front line outpost in a major war between nations, and below us is being enacted a relentless economic battle that may well determine the outcome of the struggle between China and Japan. This particular point is atop a peak in a range of rocky hills that rise from the flat valley and stretch like a chain of beads inland from the sea at Hangchow Bay. Near the foot of the hill is the little village of Sihsing, about half way between Hangchow and Siaoshan (not to be confused with Shaohsing the famed wine-producing center about a hundred miles distant). A Japanese garrison was established here a year and a half ago, and until the spring offensive along this front, it was the main base of operations.

The sentinel and his lookout station

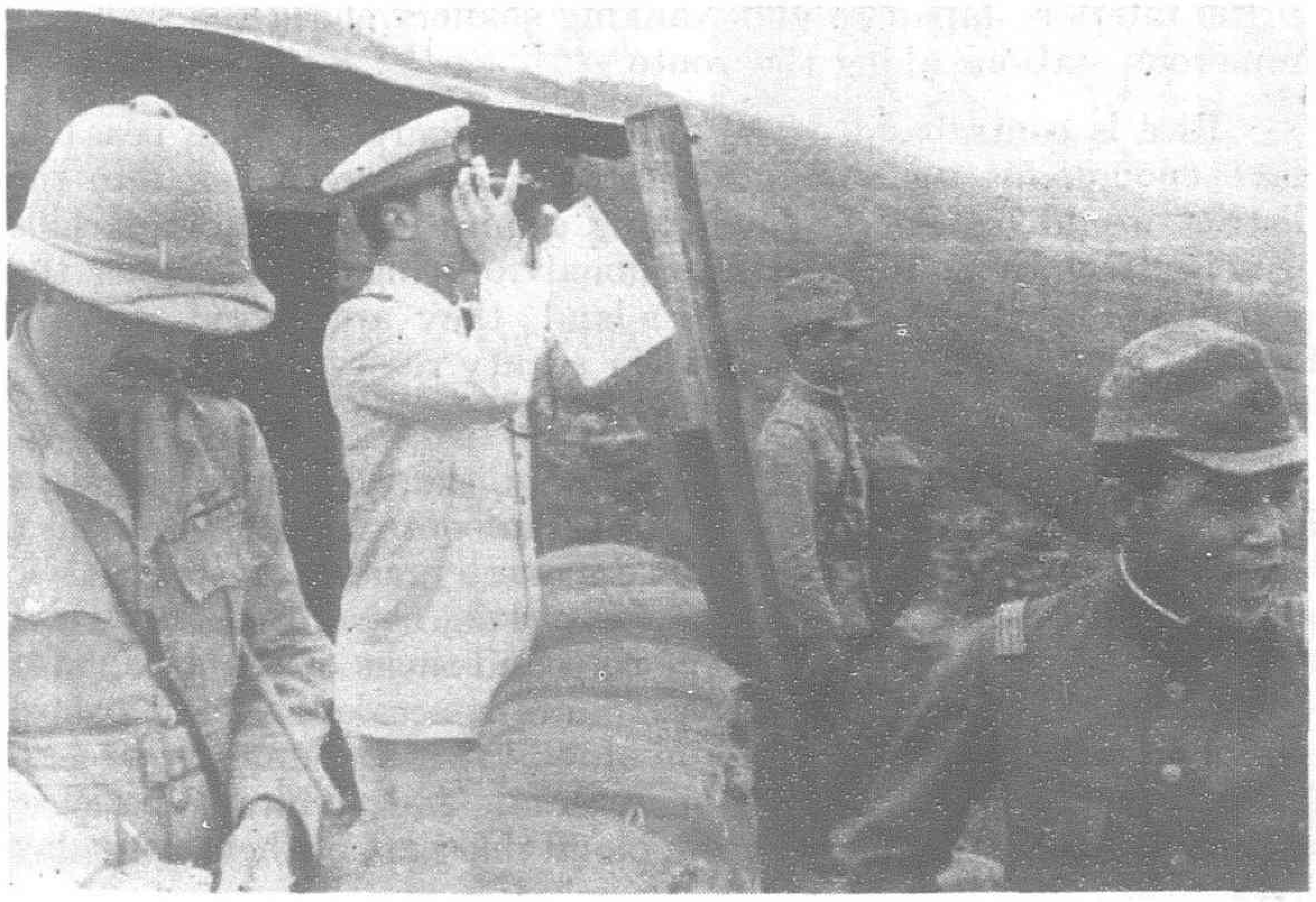
To get to this village, one takes the crowded little bus southward out of Hangchow to Nansinchiao on the north bank of the Tsien Tang River. There a sturdy little gasoline-powered launch, with bulky Chinese junks roped to each side to increase its carrying capacity, provides more or less regular transportation across the muddy three-quarters of a mile. We make the crossing with several hundred Chinese peasants, all of them with baskets and carrying poles. These simple people and their baskets play a major rôle in the economic battle going on, but that comes a little later in the story.

After the ferry there's another five miles or so aboard another bus along a road which has more ruts per mile than smooth spots. The bus, designed to carry 23 is usually loaded with 35 or 40 individuals and their possessions, some of them overflowing to the roof or hanging on to the running board.

The Sentinel's Vista

The post on the hilltop is a strongly-built earth-covered pillbox of heavy granite slabs. It is divided into two parts—the business-like defense half and the rear portion which has been converted into living quarters for some eight men. A look-out post has been built on top of the pillbox, and the flat area at the summit of the hill has several concentric rings of barbed wire entanglements with a high and formidable bamboo fence just where the hill falls into the valley in an almost sheer drop.

A small unit headed by a sergeant stands guard in this miniature fortress. It has direct telephone connections with the garrison in the village, but it would take 15 or 20 minutes for reinforcements in battle kit to clamber up that hill. Since the telephone line might be cut by guerillas, a pile of combustibles in a large oil



The broad green valleys beneath the lookout stations constantly are swept by keen-eyed watchers

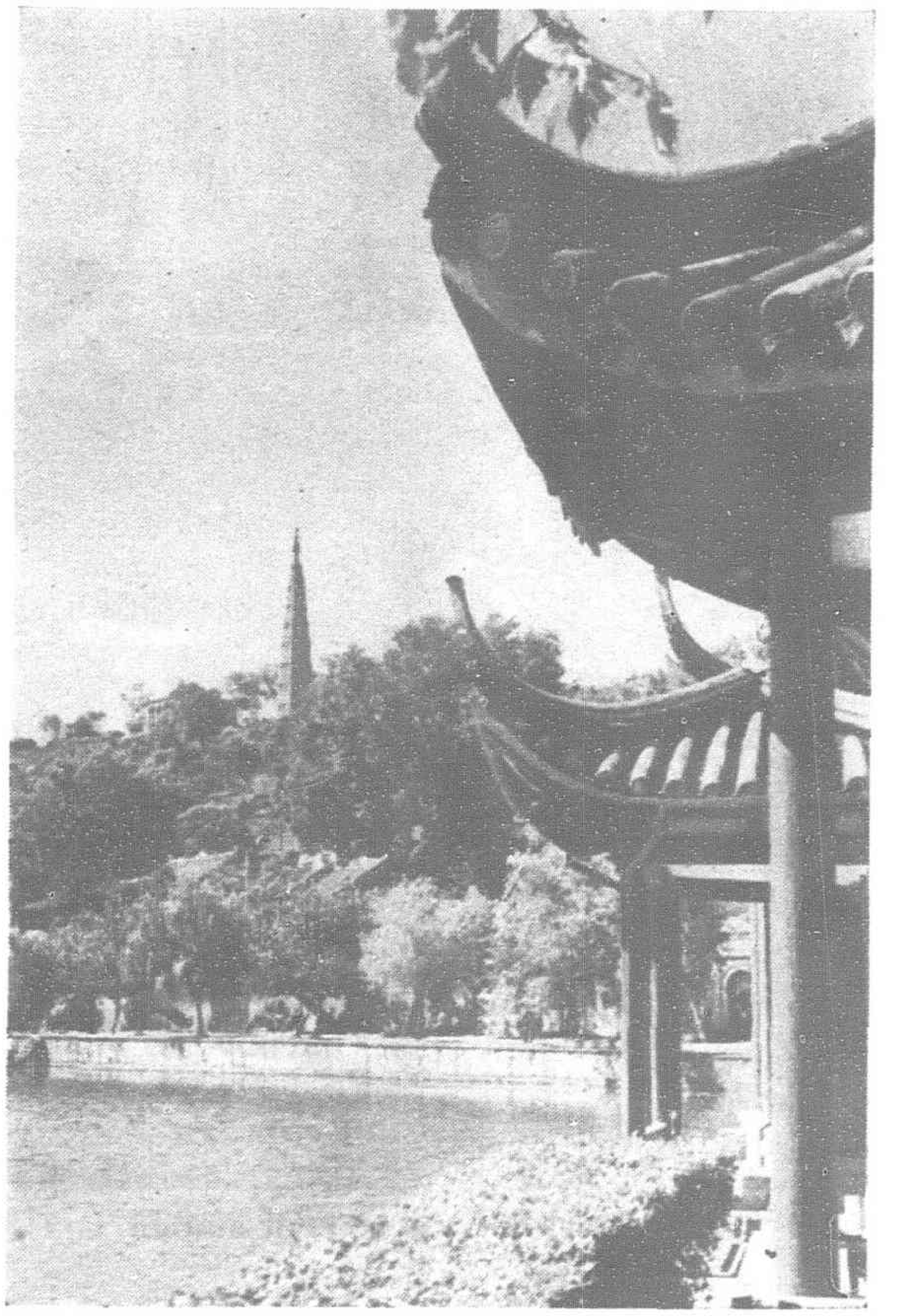
The feminine Japanese police officer whose special task is to search women pilgrims in the Hangchow region drum stands ready to be lighted as a signal fire. A sentry stands guard day and night, sweeping the distant landscape with powerful field glasses.

Ten miles of valley separate him from the foe, but just in case a farmer-guerilla band might sneak up, there is a well-oiled machine-gun in the pillbox and a rack of hand grenades stands close by the guard. Just below the look-out is a crude shelter where the men off duty can do what little there is to do to amuse themselves. All their food and water must be brought up by packhorse.

The country can be seen like a giant relief map from this point. Some ten miles to the west, on another peak, is a similar Japanese outpost. Ten miles or so to the east, there is still another little outpost almost the exact counterpart of this one we are visiting. From this particular position, the posts to the right and left are hazily visible. That means we can see 20 miles of a war front that extends perhaps 2,000 miles in a jagged, broken line from the Mongolian desert wastes, down through the arid North China plain, across the green ricefields of Central China, in and out among the hills and seaports of the South-Central regions and to the very borders of French Indo-China.

Multiply the panoramic scene before us by a hundred, and you begin to get a faint concept of the magnitude of the task of holding such a far-flung front. Multiply by a hundred the seven men and a sergeant at this outpost, and that gives a rough idea of the number of soldiers needed at any one time simply to keep a look-out. Add to these the hundreds and thousands of men at countless garrisons and base camps scattered along a front equal to two-thirds of the distance across the United States, and one does not wonder that the war in China is stalemated by geography more than by military weakness.

Those thousands of men at hundreds of outposts in the interior are engaged in the same sort of economic war on land that the British naval forces are waging on sea on another war front. Like Britain, Japan is trying to choke off vital war materials, including food, from a continental power. Britain patrols the sea lanes for enemy blockade runners, Japan has the more difficult task of checking a vast and heavily populated rural area where every individual is a potential contraband-carrier.



The Needle Pagoda seen from a sheltered spot under the eves of a temple on West Lake

The Long Thin line

Like Britain's sea patrol, Japan's lines are spread desperately thin. The ill-defined boundary stretches across half a continent, and sometimes it is necessary to stage a sudden assault, as in the recent drive to close Ningpo as a port of entry, to keep the blockade anywhere effective. But the Japanese are the first to admit their blockade cannot be kept leakproof.

Some amazing stories are told of the ingenuity of certain Chinese in smuggling contraband. Airplanes have been known to have slipped through, broken down into thousands of little parts totally unrecognizable as piece of an airplane. The bulkier parts might be hidden under a mountainous load of straw on a canal junk, with a boatload of cabbages or in the false bottom of an innocent-looking barge.

Machinery is torn down into the smallest possible units, even to the last bolts and nuts, and slipped inland across the lines after which they are assembled and operated. When the Japanese first entered the Sihsing district they found a large spinning mill over which the German flag was posted. The Japanese left the plant unmolested, but by the time they discovered that it was Chinese and not German property little was left but the shell of the factory for the machinery had been dismantled and carried over the hills into Chinese-occupied territory.

While armies battle, peasants must live, eat, work, produce and trade as they did for centuries while rival war-lords fought for the right to exploit them. If this were a barren and deserted area the blockade would be fairly simple. But the normal movements of the countryfolk cannot be interfered with without upsetting local routine and economy and that is one of the reasons why the Japanese task is so difficult. Most of the peasants seem to have no leanings toward either side in the war so long as they are unmolested, but a few are guerillas or blockade runners working in co-operation with Chungking troops. The Japanese must segregate the peaceful peasants with whom they have no quarrel from the others, which makes their task trying for the Chinese as well as for themselves.

From dawn till dusk there is a straggling two-way traffic from the countryside to Hangchow. The line inward bound consists of women and children, with a sprinkling of men, all carrying empty baskets. The line leaving Hangchow is heavily laden with foodstuffs—shelled corn, noodles, green peppers, salt fish, cured meats, sacks of flour and meal suspended from bamboo carrying poles. Children scarcely in their teens shoulder loads which would stagger grown American men, and wrinkled old women shuffle under their loads with the rest of the sun-browned, blue-clad crowd.

We spoke to several through an interpreter. They complained frankly that times were difficult and Japanese restrictions were irksome. They were a simple, ragged people, toughened by the laws of natural selection in an improvident environment, self-reliant, independent and mostly illiterate. A few had heard of Generalissimo Chiang Kai-shek, but even they were vague about what he stood for. In their blunt, honest way they just said times were hard because of the "war." The interpreter didn't know the Chinese word for "democracy" so we couldn't ask the peasants what they thought about it.

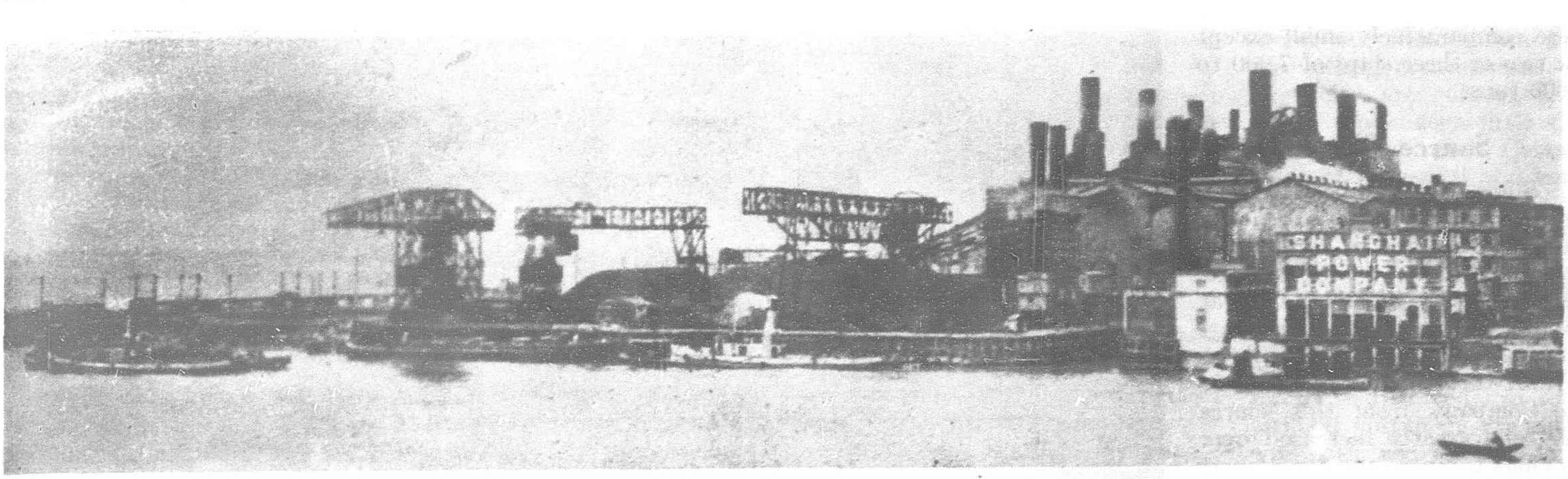
Plight of the Peasants

These were the peasants from the improverished countryside, caught between two forces, who must go into the city to purchase their staples until the summer crop begins to yield. And to make sure that none of certain vital foodstuffs, like rice, and luxuries, like cigarettes, reach the beseiged armies in the interior, Japanese and Nanking soldiers check the traffic at numerous stations along the route.

Rice is contraband. The authorities figure that the peasants have enough for their own needs, and any more taken into the district would be sent to Chungking armies in the adjoining hills or seized by them in their occasional foraging raids among the peasants. In a virtual no-man's-land, they are forced to live frugally by one side, and even their scanty reserves are plundered by the other.

While the menfolk work in the fields, the women and children go to market forming long queues at the control stations on their way home. Here Chinese and Japanese guards inspect their identification cards, search them for pistols, check for contraband and jab steel rods into baskets of corn and sacks of beans to make sure no weapons or machinery parts are concealed. These people complain, of course, at the tedium of red tap and frequent searches, but they take the trials with characteristic and admirable patience as if the difficulties are simply an inevitable part of their workaday lives.

(Continued on page 216)



Riverside Power Station.—Southern end of site viewed from river

Shanghai Faces Power Curtailment

By L. M. PHARIS, Vice-President and General Manager, Shanghai Power Company

SHANGHAI depends for its existence and welfare to a very large extent upon the welfare of its industries which have been built up over many years and are responsible for the tremendously large population which we have to day.

Industries of any size which require power in their manufacturing process are almost completely electrified, i.e., they depend for their power supply upon electricity, and due to low rates and good service they have found it more economical to purchase their electricity from the electric utilities rather than install their own generating plants. Therefore, any condition which adversely affects the supply of the electric utilities also adversely affects industry and commerce. It also affects the residential user, but to a lesser extent. It causes him much inconvenience and mental anguish, and may affect the pocket-book.

I can present the problem which confronts the electric utilities only from the standpoints of the Shanghai company, although the problem is much the same with respect to the other electric utility companies.

Electricity is both a service and a commodity. It is a service in that it is necessary to deliver it to the customer. It isn't possible for the customer to send his truck or lorry to the place of manufacture or a godown and cart it away either in the form of kilowatts or kilowatt-hours, except in the small amounts which can be provided by storage batteries. It has to be manufactured and delivered at the instant of use. It is a commodity in that it requires materials and a manufacturing process in its production.

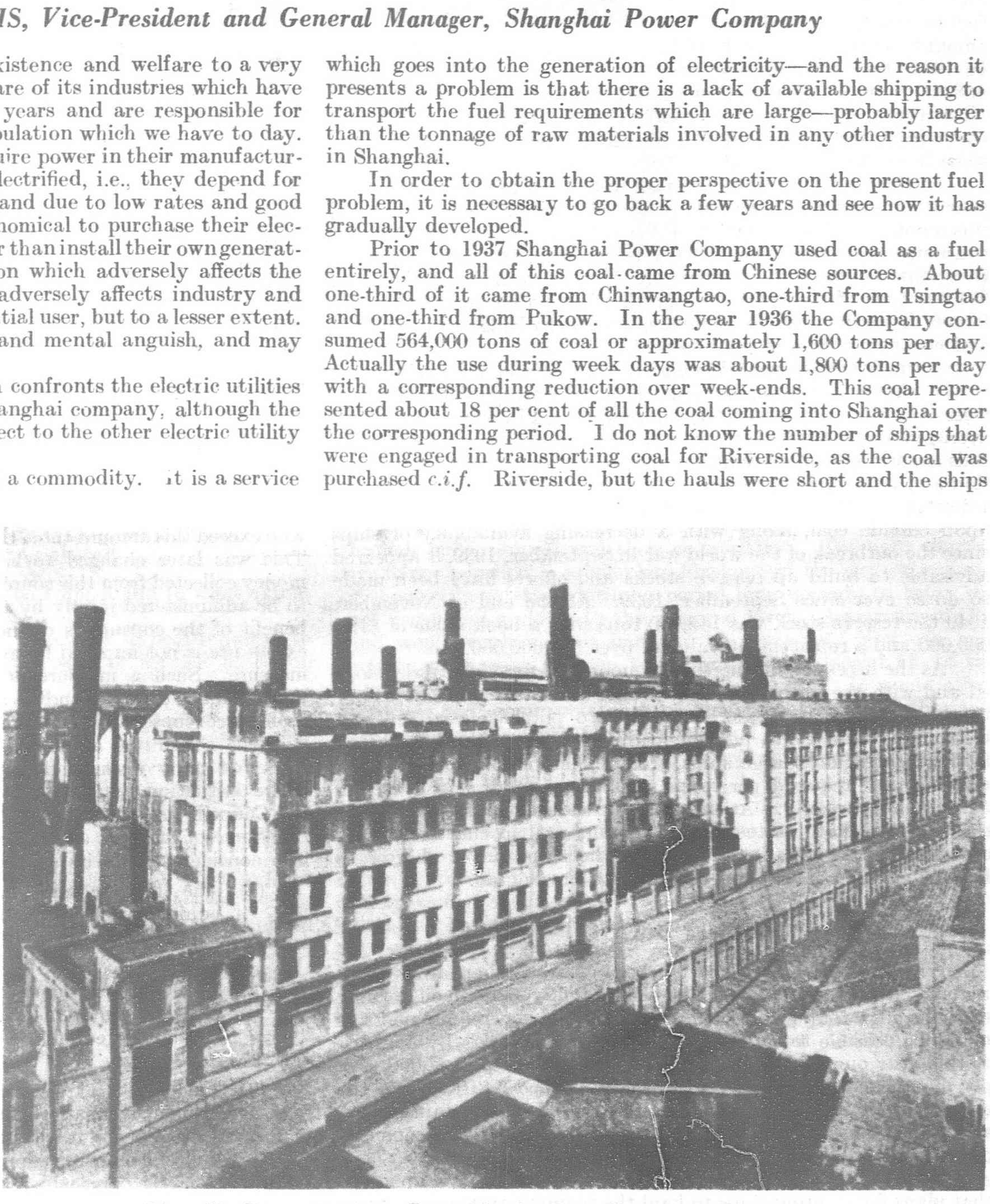
Water, Fuel Used

The raw materials entering into its manufacture are water and fuel, and the process consists in converting the heat units in the fuel into units of electrical energy. The water used in the process is a medium which can be used over and over, and is not consumed or lost except to a very small degree. The fuel is consumed and is the principal raw material used.

The present problem is one of fuel supply—the raw material which goes into the generation of electricity—and the reason it presents a problem is that there is a lack of available shipping to transport the fuel requirements which are large—probably larger than the tonnage of raw materials involved in any other industry in Shanghai.

In order to obtain the proper perspective on the present fuel problem, it is necessary to go back a few years and see how it has gradually developed.

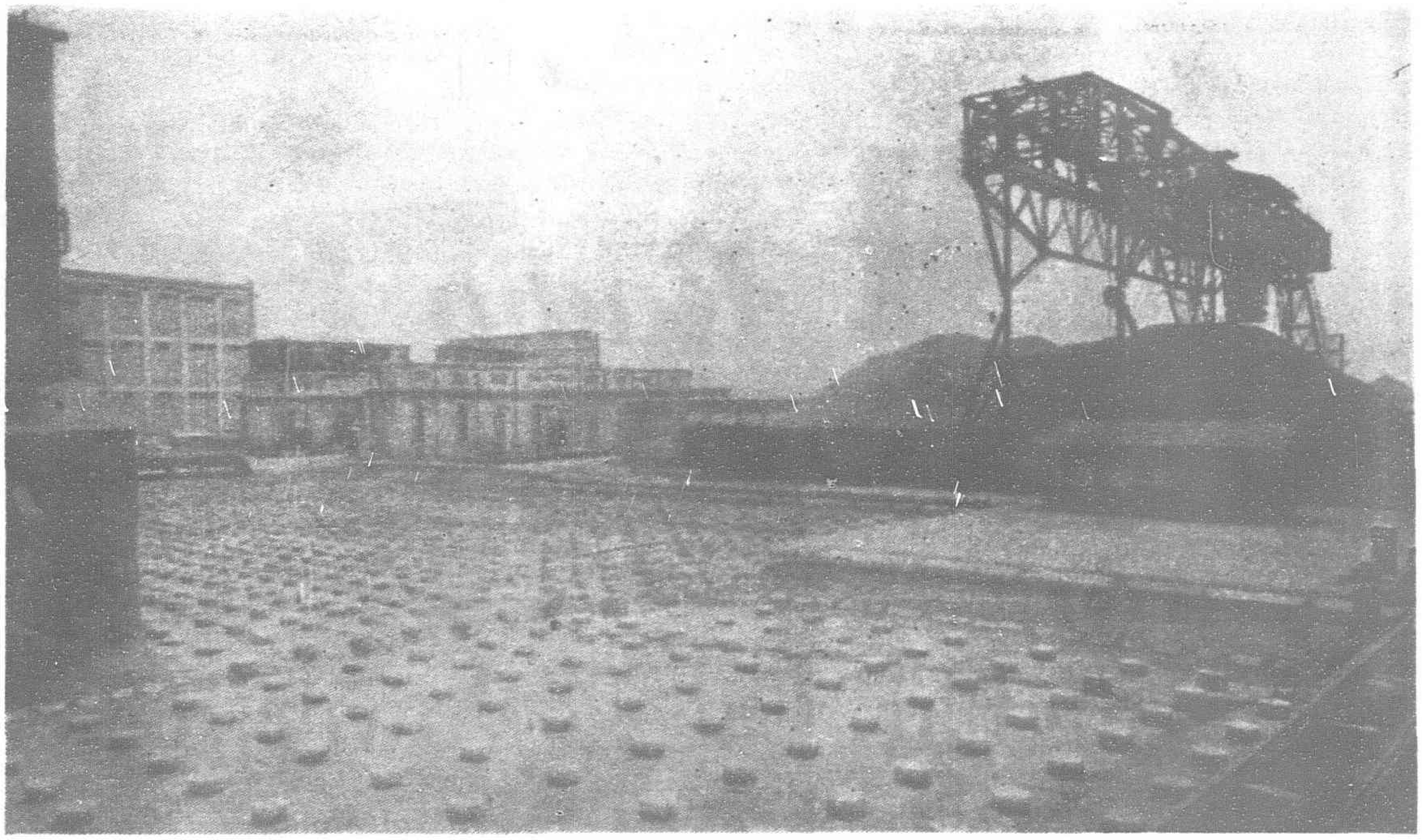
Prior to 1937 Shanghai Power Company used coal as a fuel entirely, and all of this coal came from Chinese sources. About one-third of it came from Chinwangtao, one-third from Tsingtao and one-third from Pukow. In the year 1936 the Company consumed 564,000 tons of coal or approximately 1,600 tons per day. Actually the use during week days was about 1,800 tons per day with a corresponding reduction over week-ends. This coal represented about 18 per cent of all the coal coming into Shanghai over the corresponding period. I do not know the number of ships that were engaged in transporting coal for Riverside, as the coal was purchased *c.i.f.* Riverside, but the hauls were short and the ships



Riverside Power Station.—East side showing offices and switch house were comparatively small except for two or three ships of 7,000 to 9,000 tons.

Source Closed

Since the middle of 1937, Tsingtao and Pukow have been closed as a source of supply and Chinwangtao has, therefore, been the only source of supply close at hand available to the Company. Since the beginning of hostilities in 1937 the amount available to the Company from this source has been greatly increased over previous takings, and for a short period of time in the latter part of 1937 and early in 1938 with the reduced consumption of electricity it met the requirements. However, as industries resumed operations a time came in 1938 when it was necessary to go somewhat far afield for the amount of fuel required, over and above the amount obtainable from K.M.A. In 1938, fuel consumption was 468,000 tons as compared with 564,000 tons in 1936. In 1936 all of this fuel came from sources in China. In 1938, 168,000 tons came from sources outside—Australia, South Africa, India and some from the United States.



Site oi new structure at Riverside Power Station after pile driving had been completed

In 1939, consumption increased to 653,000 tons, the maximum yearly consumption recorded by the Company. 353,000 tons of this amount had to be imported, largely from India. In 1940, the consumption dropped from 653,000 tons to 623,000 tons, due largely to a slowing down of industries in the last quarter of the year. 323,000 tons of the total consumption had to be imported, again largely from India which so far has proved to be the most reliable and cheapest source of outside coal.

Actually the amount of foreign coal imported has been in excess of the above figures on account of the necessity of building up reserve stocks. Prior to 1937, the coal carried in our reserve stock averaged about 40,000 tons with a value on our books of $384,000. This amount of coal was sufficient for about 20 to 30 days' consumption and was ample to take care of delays in the receipt of coal in accordance with schedules: With increasingly greater dependence upon outside coal, along with a decreasing availability of ships since the outbreak of the world war in September, 1939, it appeared advisable to build up reserve stocks and efforts have been made to do so ever since September, 1939. At the end of November, 1940 the reserve stock was 145,000 tons with a book value of $12,000,000 and a replacement value of over $23,000,000.

As the necessity for increased amounts of foreign coal developed and with the outbreak of the world war, it became necessary to charter ships as it was impossible to purchase coal on any other basis than f.o.b. port of loading. Due to the long ocean haul which requires large ships, from the standpoint of economy, and the time required per round trip, many more ships were required than formerly. At one time in the early summer of 1940 the Company had fourteen ships on time or trip charter hauling coal from India, this in addition to the ships under charter to K.M.A. engaged in hauling coal from Chinwangtao.

Boilers Burn Oil

When ships on time charter began to be taken away steps were taken to convert some of the boilers at Riverside to oil burning with the idea that if the coal supply fell below requirements it might be possible to supplement it with bunker oil. By January of this year our oil burning capacity had increased to 7,000 tons per month and in February we actually burned 5,810 tons or the equivalent of 8,715 tons of Indian coal. However, tankers are as scarce as merchant ships as both are needed in the conduct of the war.

In the latter part of February of this year when it appeared that plans for securing ships to haul the required amount of Indian coal were not going to materialize; when it further appeared that oil might not continue to be available and when reserve stocks had begun to decrease and with only half of future requirements at all assured, it became necessary to call the attention of the public to the situation and to plan for curtailment in the use of electricity. Accordingly, the matter was brought to the attention of the Shanghai Municipal Council in the latter part of February. A Committee was appointed by the Council to study the situation and make preliminary recommendations. This committee was composed partly of disinterested individuals and partly of individuals representing industries that might be most vitally affected by any decisions made, and hence the committee made some general suggestions only and recommended that an impartial committee or board be appointed by the Council to study the matter of allocation of electricity very thoroughly and make its precise recommendation. Pending the report and recommendations of this committee the Council authorized the Company to restrict service to customers using in excess of 1,000 kwh. per month to 70 per cent of their established usage, and to collect from those customers who exceed this amount three times the normal rates for such excess. This was later changed to six times the normal rate. All the money collected from this source is to be placed in a reserve account to be administered jointly by the Council and the Company to the benefit of the consumers of the Company. This high rate on the excess use is not imposed for revenue or profit, but as a restrictive measure. Such a measure is not scientific, nor is it equitable, but pending a detailed study it appeared to be a practicable measure to enforce conservation.

The committee appointed by the Council has been hard at work for many weeks and has made an exhaustive study of the entire stituation and has just recently submitted its report to the Council. Action by the Council can be expected shortly.

Some of the facts and figures which the committee had to take into consideration in its study of the problem, are as follows:

(1) The fuel requirements without curtailment are the equivalent of 50,000 tons of coal per month, which is the equivalent of an 8,000 ton cargo on an average of every $4\frac{1}{2}$ days.

(2) Dependable receipts are 25,000 tons per month or $\frac{1}{2}$ of the requirements. This represents the probable maximum extent to which restrictive measures may have to go.

(3) Fuel stocks at the time the question of restriction first came up were approximately 150,000 tons or three months' requirements if all supplies of fuel were to be cut off, and six months' supply if only one-half of requirements (i.e. the present dependable supply) continues to be available.

(4) By the time experimental restrictions have been supplanted by definite allocations, it is estimated that stocks of fuel will be reduced to 100,000 tons (They are down to 114,000 tons at the present time—May 1, 1941).

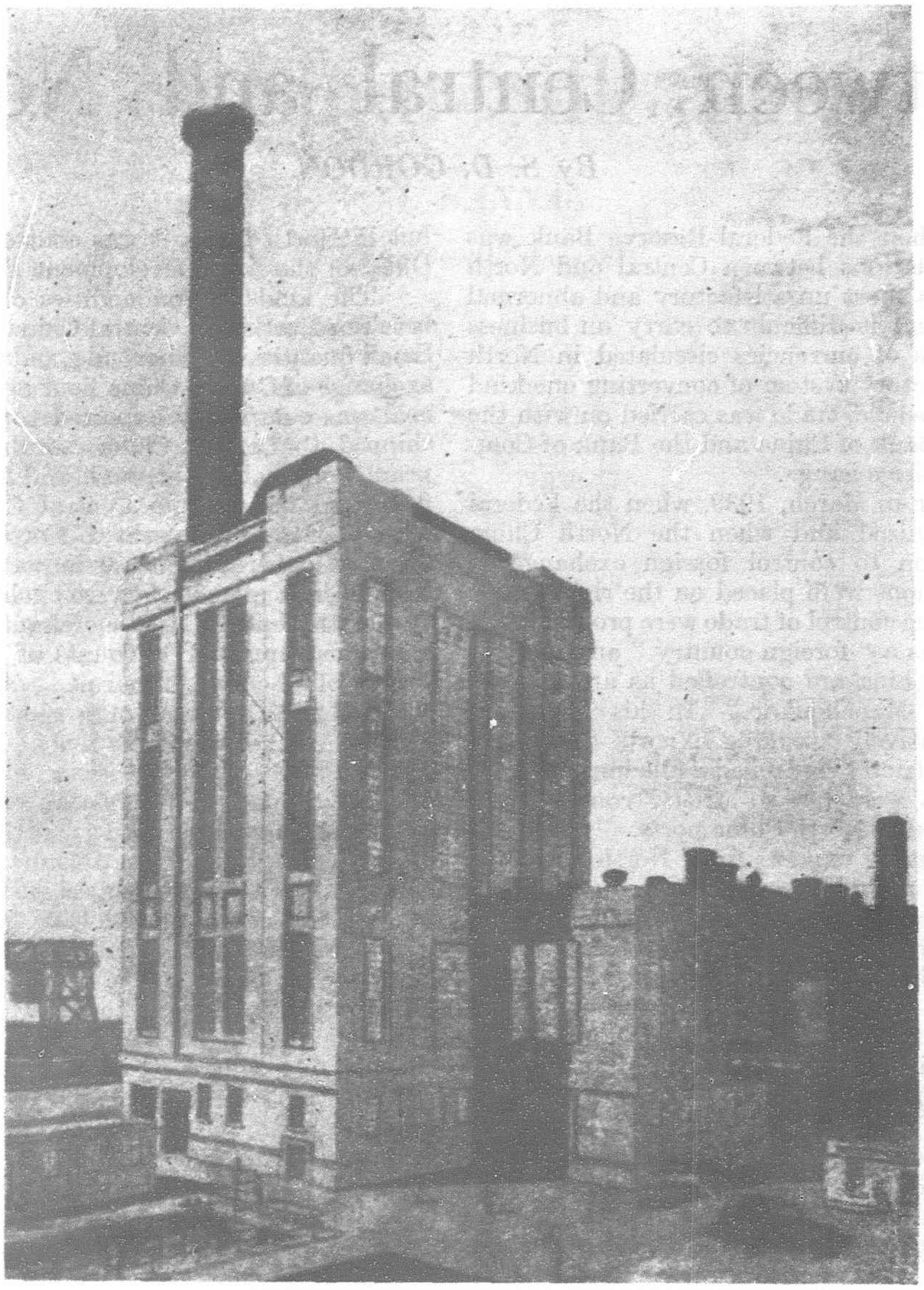
(*a*) It is impossible for industries to throw masses of labor out of employment.

(*b*) It is impossible for established processes of manufacture to be changed in an instant. Many operators will have to experiment to determine how they can reduce their consumption of electricity.

(*c*) Control and regulation of its plant and system must also be experimented with by the Company.

(*d*) With the fullest co-operation and support from all, time will be required for adjustment to the new conditions and in the meantime fuel will be consumed at a rate in excess of that at which it is currently received.

So much for the fundamentals of the fuel situation.



—*Phoenix Engineering Company*

Architect's drawing of the planned Riverside Steam Electric Station to be erected

Consumption Analysed

Where can restrictive measures be applied and to what extent must they be applied:

The following are the monthly quantities of coal required to generate electricity for the various classes of service based on the average for the year 1940:

Industrial power		37,932 tons
Commercial use		6,940 ,,
Public utilities		3,187 ,,
Residential use		2,766 ,,
Municipal use:		
Street and roadway Ltg.	395	
Other use	679	
		1,072 ,,
		51,897 tons

If we analyse this in terms of percentage of the total, we find that:

Industrial power use is	73.5% of the total
Commercial use is	13.0% ,, ,, ,,
Public utility use is	6.0% ,, ,, ,,
Residential use is	5.5% ,, ,, ,,
Municipal use is	2.0% ,, ,, ,,
	100.0%

Residential use alone accounts for 2,766 tons per month or about five per cent of the total, so that if we assume that all residential use could be eliminated in the interest of industrial and commercial activity, and that we all go back to the dark ages so far our illumination and the other conveniences of electricity are concerned, it would make very little difference in the result. Curtailment of industrial and commercial use must result if one half of our fuel requirements can be met.

There are 102,000 points of delivery or separate customers with 124,000 meters that have to be read each month. Included in the 102,000 customers are 3,500 who each use 1,000 kwh. or more per month, the remaining 98,500 each using less than 1,000 kwh.

Users Classified

The 3,500 who use 1,000 kwh. per month, or more, account for 92.8 per cent of total sales. The remaining 98,500 customers account for 7.2 per cent. It is a very difficult matter to exercise any control over the use of electricity by a customer when this use is entirely in his own hands through the pressing of a button or the flip of a switch, and it is, therefore, impractical to rigidly control the entire 102,000 customers. It was, therefore, felt that the only way in which curtailment can be accomplished is through the control of the 3,500 customers who use 92 per cent of the total. Conservation in the use of electricity by the great number of small customers can only be accomplished through public appeal and their co-operation. The only alternative to co-operation is a complete blackout of the city or sections of the city in rotation during a period long enough to bring the coal consumption down to the required level. A measure of this kind would work a great hardship on everyone. You can well imagine what would happen to the business and social life of the community if such a measure had to be applied. It would affect factories and commercial establishments, slow down business contacts and affect the forces of law and order. It is not to be thought of except as an extreme measure, if the co-operation of all consumers is not obtained.

There are certain uses that must be met and, therefore, must have priority over other uses. For instance, those services that have to do with law and order and essential services, such as street lights, government, police, fire brigade, defense forces, hospitals, water, sewage pumping, telephone, must have priority in any allocation measures which are adopted.

We can rest assured that everything is being done that can be done to increase fuel supplies. Some progress is being made, but it is discouragingly slow. As of April 1 the Company was still short of its requirements of 485,000 tons for the balance of 1941 by 176,000 tons, or 36 per cent, and unless some of the possibilities under investigation and negotiation materialize, it may be necessary to enforce a more drastic curtailment in the near future. Any conservation of use which can be made by the general public however slight, is a step in the right direction and while it may not greatly affect the coal pile at Riverside, it will help to some extent to keep men employed in industrial establishments.

Trade Between Central and North China

By S. D. GORDON

SINCE March, 1938, when the Federal Reserve Bank was established, trade relations between Central and North China have entered a most unsatisfactory and abnormal period. Traders found it difficult to carry on business because of the different kinds of currencies circulated in North China and the lack of a satisfactory system of converting one kind of currency to another. As a whole, trade was carried on with the *fapi*, such as the notes of the Bank of China and the Bank of Communications, as the medium of exchange.

It was only one year later in March, 1939, when the Federal Reserve Bank was well organized and when the North China authorities took definite action to control foreign exchange in North China that trade conditions were placed on the right track. Later on when regulations for the control of trade were promulgated, Central China was dealt with as a " foreign country " and imports from and exports to Central China are controlled as are imports from and exports to Japan or " Manchoukuo." In this connection it must be said that comparatively speaking exports to Central China from North China were strictly controlled while imports from Central China to North China were not so strictly controlled as *fapi* was allowed to be circulated in North China ports.

Because of this strict control, exports from North China to Central China dropped heavily after March 1939 but imports from Central China to North China remained unchanged in volume and as a result North China had a surplus of imports from Central China over her exports to Central China by the end of the year. This affected directly the rate of remittances between Tientsin and Shanghai. Premium required for the remittance of money from Tientsin to Shanghai increased and the value of Federal Reserve Bank notes in relation to the *fapi* dropped in the black market.

As this situation was highly unsatisfactory and unfavorable to North China, a set of new regulations was promulgated in July, 1940 by the North China authorities to control imports from the Yen-bloc countries. Although these regulations are applicable to imports from Japan and " Manchoukuo," they were mainly enacted for the purpose of controlling imports from Central China. By so doing, it was hoped that trade in North China using *fapi* for the settlement of accounts might be reduced and therefore the value of *fapi* in North China might be also reduced. In other words, these measures were taken in order to boost the value of the Federal Reserve Bank notes.

These new regulations of control have not only stopped trade between Central and North China handled through the Chinese, European and American merchants, they have stopped trade between these two parts of China handled by Japanese merchants. In order to give effective relief to these Japanese merchants and in order to relieve North China from the problem of lack of supply of special products imported from Central China, the North China authorities introduced the barter system between Central and North China in the latter part of 1940.

As a matter of fact as soon as the North China authorities started to control foreign exchange in March, 1939, a number of enterprising Japanese merchants started their own barter system between Central and North China. These transactions through the small barter system were limited to cargoes valued at less than $10,000 or even as low as $1,000. This barter system was carried out only when a given Japanese firm had branches in Shanghai and Tientsin. The prices of the exchanged commodities were fixed according to the cost of production as well as the prevailing market prices of the different kinds of commodities. Settlement of the accounts was made in pounds sterling and, after the outbreak of the second world war, in American dollars. In a number of cases, settlements were made in Japanese yen notes. In North China, these settlements were made through the Bank of Taiwan and the Bank of Chosen. In Central China, they were made also through these two Japanese banks. But the final settlement of all accounts was made through the Federal Reserve Bank in Tientsin. The barter system was controlled by the Commercial Counciller stationed in Shanghai as representative of the Japanese Ministry of Finance but in North China it was controlled by the North China Liaison Office of the Asia Development Board.

The kinds of commodities changed under this barter system between North and Central China were very few in the early days. Small quantities of Shantung coal were sent to Central China for the exchange of Central China flour and wheat. Later on, as Shantung coal was completely exported to Japan, very little coal could be shipped to Central China, so the North China merchants used peanut oil, walnut, almond, and gourmet powders to exchange for flour and wheat from Central China. In addition to flour and wheat Central China sent to North China small quantities of hemp bags. Furthermore, it was important to note that the Central and North China merchants were exchanging different counts of cotton yarn with Central China merchants. Apparently North China had a surplus supply of 42-counts of cotton yarn and had insufficient supply of 16-counts of yarn.

After the outbreak of hostilities in Europe in September, 1939, because of the increasing demand for commodities in Japan, the North China authorities took more strict measures against the import of Japanese products into North China. With decreasing imports of Japanese goods, North China found it more urgent to import goods from Central China. There was therefore a general demand for a more comprehensive plan for this barter system between Central and North China.

It was not until June, 1940 that the North China authorities with the co-operation of the representatives of the Japanese Ministry of Finance and the Asia Development Board worked out a comprehensive plan of barter agreement between Central and North China. According to this agreement, North China would supply Central China with $60,000,000 worth of salt, coal, tobacco leaves in exchange for $66,000,000 worth of rice, flour, wheat and cigarettes. The additional $6,000,000 worth of Central China products imported into North China would be balanced by exporting commodities of Manchuria or Inner Mongolia to Central China. This agreement was carried out from July 1, 1940 to March 31, 1941.

In this connection, it must be noted again that the serious problem faced by the merchants and authorities of Central and North China was still a problem of currency. According to the agreement for the exchange of goods between July, 1940 and March, 1941, all prices of commodities were calculated in terms of American dollars. At the exchange rate of Y100 for U.S.23\frac{7}{16}$, the total amount of $66,000,000 was U.S.$15,468,750. In the transactions, both the Central and North China merchants were supposed to convert the prices of their commodities from either *fapi* or yen or Federal Reserve Bank notes into American dollars.

Because of the different economic systems in Central and North China, because of the currency problem as well as the difference of cost of production and market prices, this barter agreement of $66,000,000 was not as satisfactorily carried out as desired. The North China and the Japanese authorities are still striving to formulate a more comprehensive plan for the exchange of goods between Central and North China for the current year from April 1, 1941 to March 31, 1942.

It is to be hoped that after another year of experiment, the barter system will be carried out satisfactorily both to the Central and North China interests. No matter what will be the result of this barter system, it may be noted that the introduction of this system will soon oust altogether the business interests of the Third Powers in the trade between these two parts of China.

Japanese in Shanghai

Japanese in Shanghai and environs totalled 138,020 on June 1, representing an increase of 5,000 over the previous month, according to figures released by the Central China Police Affairs Bureau of the Japanese Embassy.

The total included 87,277 in Shanghai, and comprised 79,192 Japanese, 5,144 Koreans and 2,911 Formosans.

Manufacture of Spun Silk Yarn in Mysore

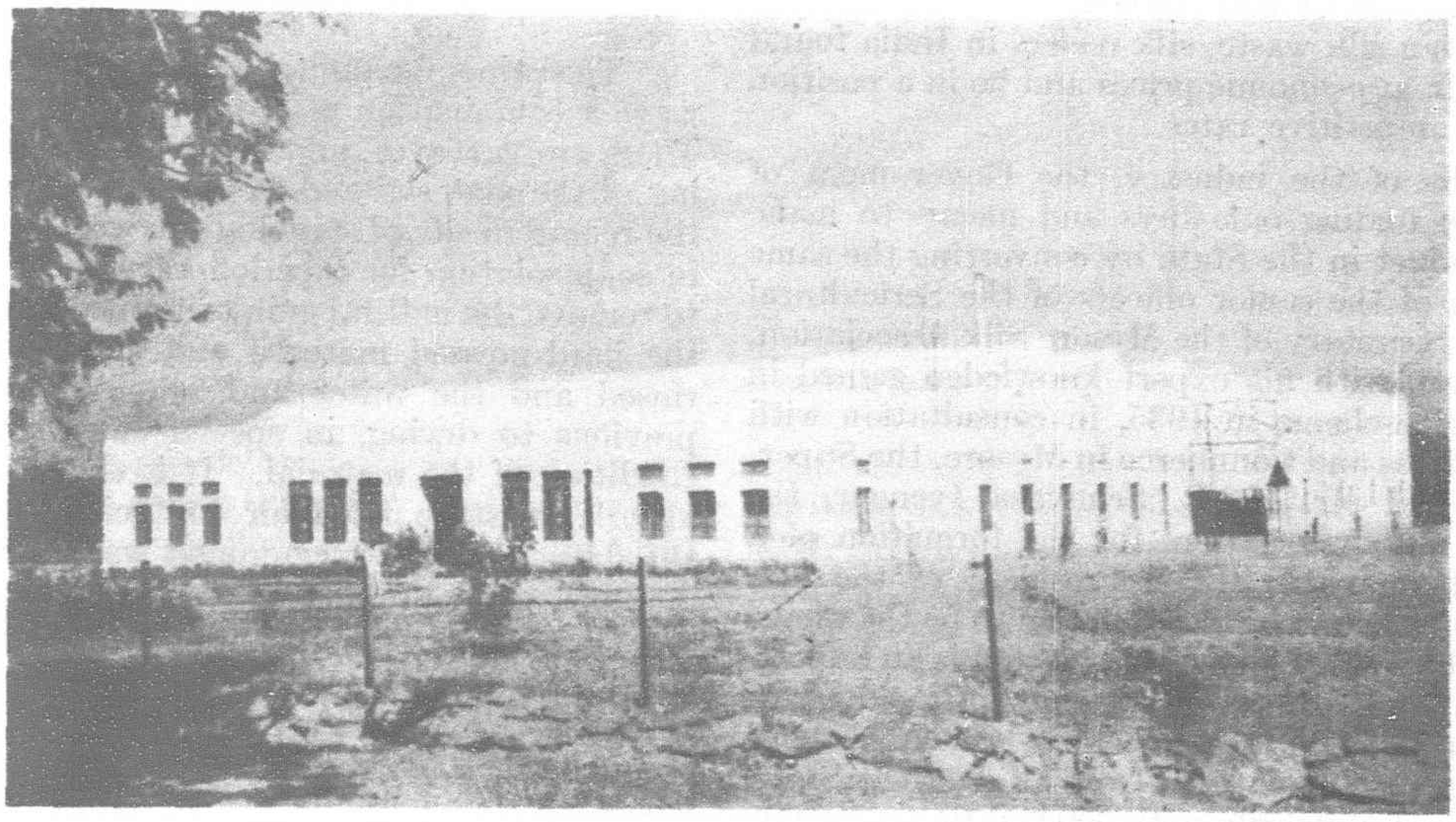
By V. A. KANNAN

(The Indian Textile Journal)

RAW materials required for the manufacture of spun silk are silk waste, pierced cocoons, gum waste, throwsters' waste, and cocoons unfit for reeling. The most important of these is the silk waste obtained during the process of reeling. It is a misnomer to call this by-product "silk waste," considering the valuable product, "spun silk and noil yarn," got out of this so-called "silk waste."

Mysore is a very important silk producing center in India. Government, realizing the importance of the industry, has a separate department for the development of the industry and the annual budget of the department works out to about Rs. 2 lakhs.

The public are aware of the industrial policy of the Government of Mysore initiated by Sir Mirza M. Ismail, the Dewan of Mysore, in development of both large and small scale industries in the State. In all large-scale industries floated during the past five years as joint-stock companies in Mysore, Government have taken up shares, more with a view to create confidence among the investing public and to have certain amount of control over such concerns and see the concerns started flourish well.



General view of the Mysore Spud Silk Mills, Channapaina

Among the industrial enterprises started as joint-stock companies, such as paper, sugar, chemical and filatures, etc., the Mysore Spun Silk Mills is one such important concern and it is the only one of its kind in India specializing in the manufacture of spun and noil yarns.

India has a large home market for spun silk and noil yarns. Huge quantities are being imported each year from foreign countries such as Japan, England, Switzerland, Italy and France. It will be of interest to have an idea of the huge quantities of imported spun and noil yarns into India.

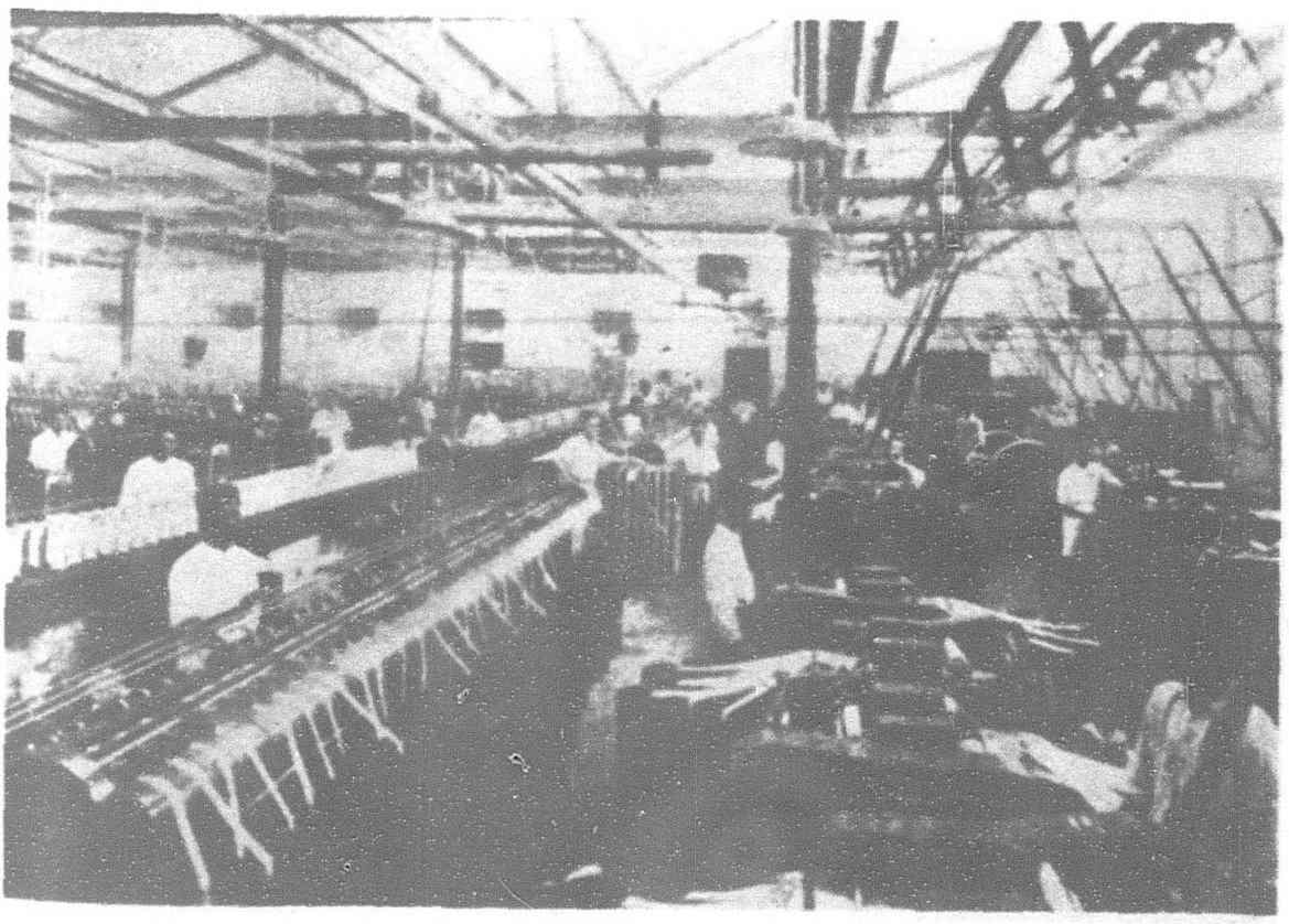
IMPORTS OF SPUN AND NOIL YARNS

	Lbs.	
1934-35	3,163,841	Spun silk and noil yarns.
1935-36	3,514,859	,, ,,
1936-37	2,268,152	,, ,,
1937-38	1,584,298	Spun silk only.
	474,911	Noil yarns only.
1938-39	559,432	Spun silk only.
	261,484	Noil yarns only.

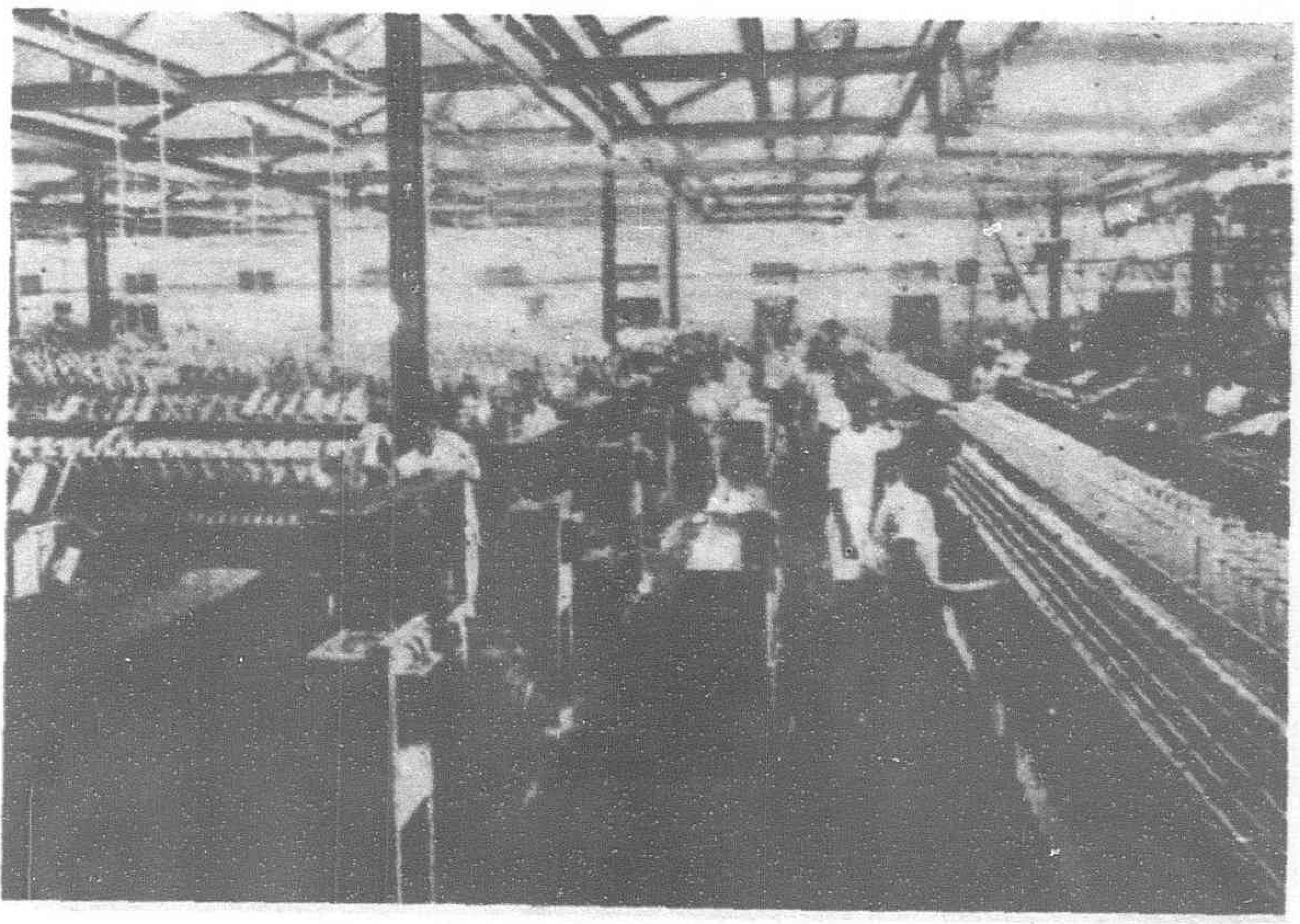
It is estimated that India (Mysore, Kashmir, Bengal and Madras) produces above one million lb. of silk waste of various kinds. Out of this quantity Mysore produces about 400,000 lb. of charaka waste besides a large quantity of pierced cocoons, throwsters' waste, gum waste and cocoons unfit for reeling.

When the world trade depression started in 1930, the silk industry also suffered a great deal, with the result that the usual export trade of silk waste came to a dead stop. In pre-war days the demand for silk waste from foreign countries like Italy, France, Japan and England was so great that in those days it was possible to buy raw silk on credit but not silk waste. Naturally, in the absence of a factory, the entire commodity was exported to foreign countries. Hence the merchants dealing in silk waste were obliged to advance large sums to charaka owners just to make sure of obtaining supplies from them without disappointment and enable them to fulfil their forward contracts with the firms at Madras and Bombay.

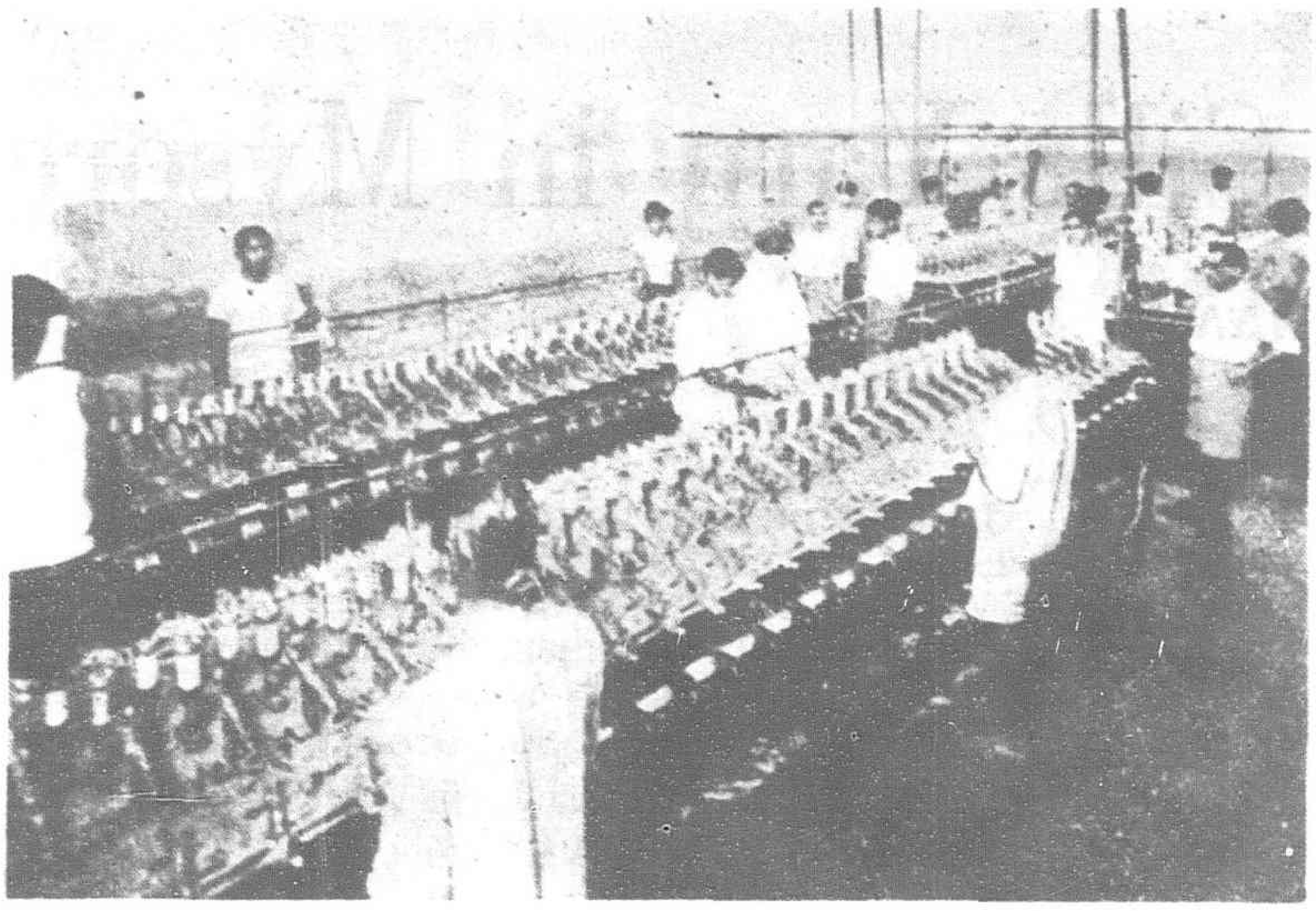
With the imports of large quantities of cheap raw and spun silk



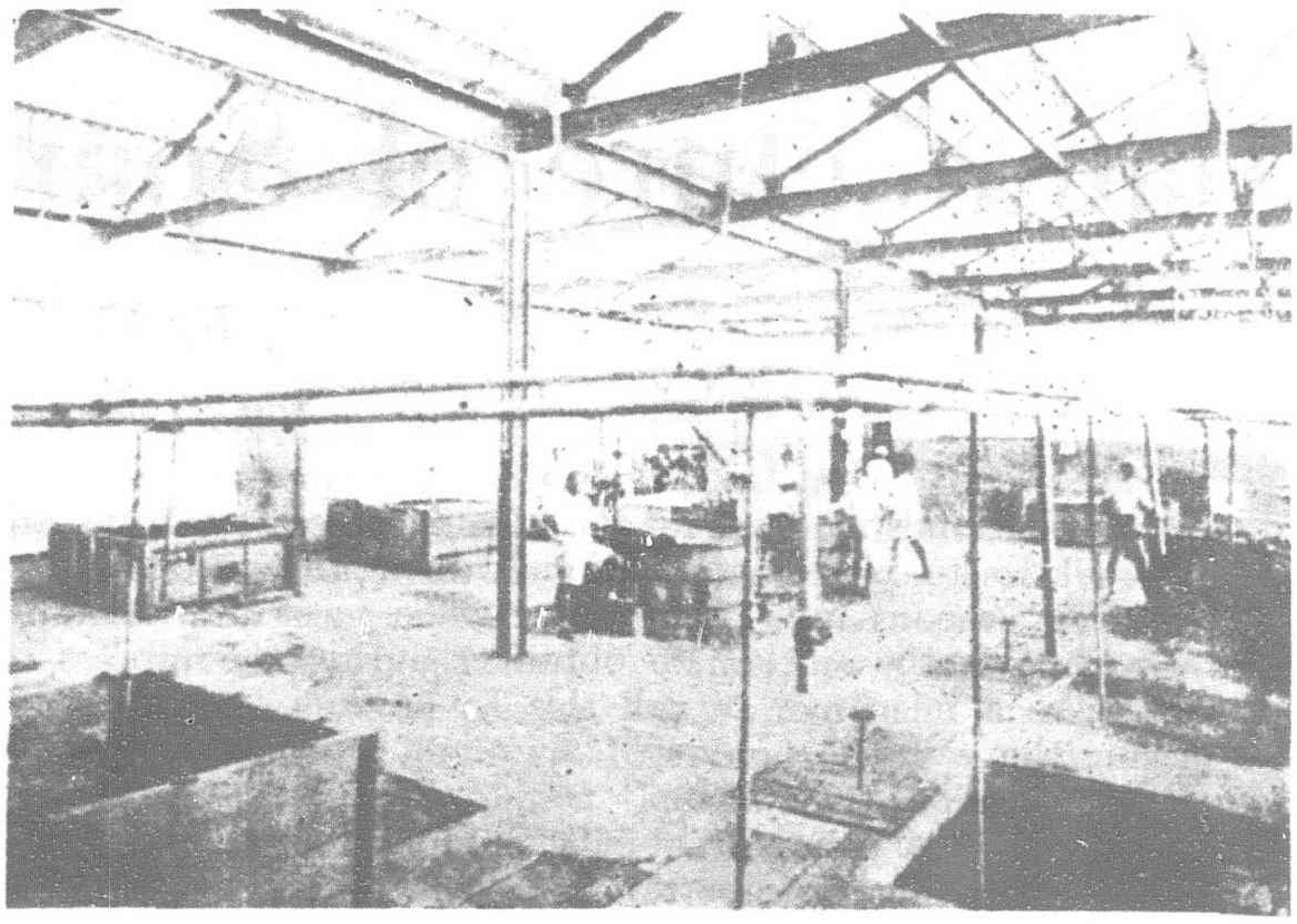
Inside view of preparing department



General view of spinning frames



Gassing frames



View of opening and dressing department

and noil yarns from Japan, China and without an outlet for the accumulated stocks of Indian silk waste, silk reelers in India found it impossible to produce silk at economic prices and be in a position to sell their raw silk at competitive rates.

Considering the plight of the industry, the Government of Mysore were very keen in finding out ways and means to make the best use of this by-product in the State by converting the same into spun silk yarn. One of the senior officers of the Sericultural Department and the Hon. Secretary of the Mysore Silk Association, Mr. K. Shamshuddin Khan, with his expert knowledge gained in Japan prepared a workable scheme in 1935, in consultation with the then Director of Industries and Commerce in Mysore, the Superintendent of Sericulture and Mr. K. R. Srinivasa Iyengar, the Chairman of the Mysore Silk Association, for the formation of a joint-stock concern at Chennapatna. The President of the Silk Association and its Honorary Secretary now happen to be the Chairman and the Manager of the mills. The place selected is an important silk-producing center in the State and is eminently suited on account of its ideal climate, skilled labor, cheap power and, above all, it can draw its supplies of raw material from all over the State. The mill is capable of dealing ordinarily with 300,000 lb. to 500,000 lb. of silk waste per year. The raw material now available in India is adequate for producing about 1½ lakhs of pounds of spun silk yarn. The mill when working full will employ about 500 operatives and secure occupation to about 1,000 families indirectly. The mill is now producing spun silk yarn 2/120s and 2/60s English counts and noil yarn 17/1 metric.

The object of the company is not only to deal with the waste produced in Mysore but also from other parts of India such as Bengal, Kashmir, and Madras and be in a position, as far as possible, to replace the foreign imports and meet the growing demand of the handloom weavers.

Process of Manufacture

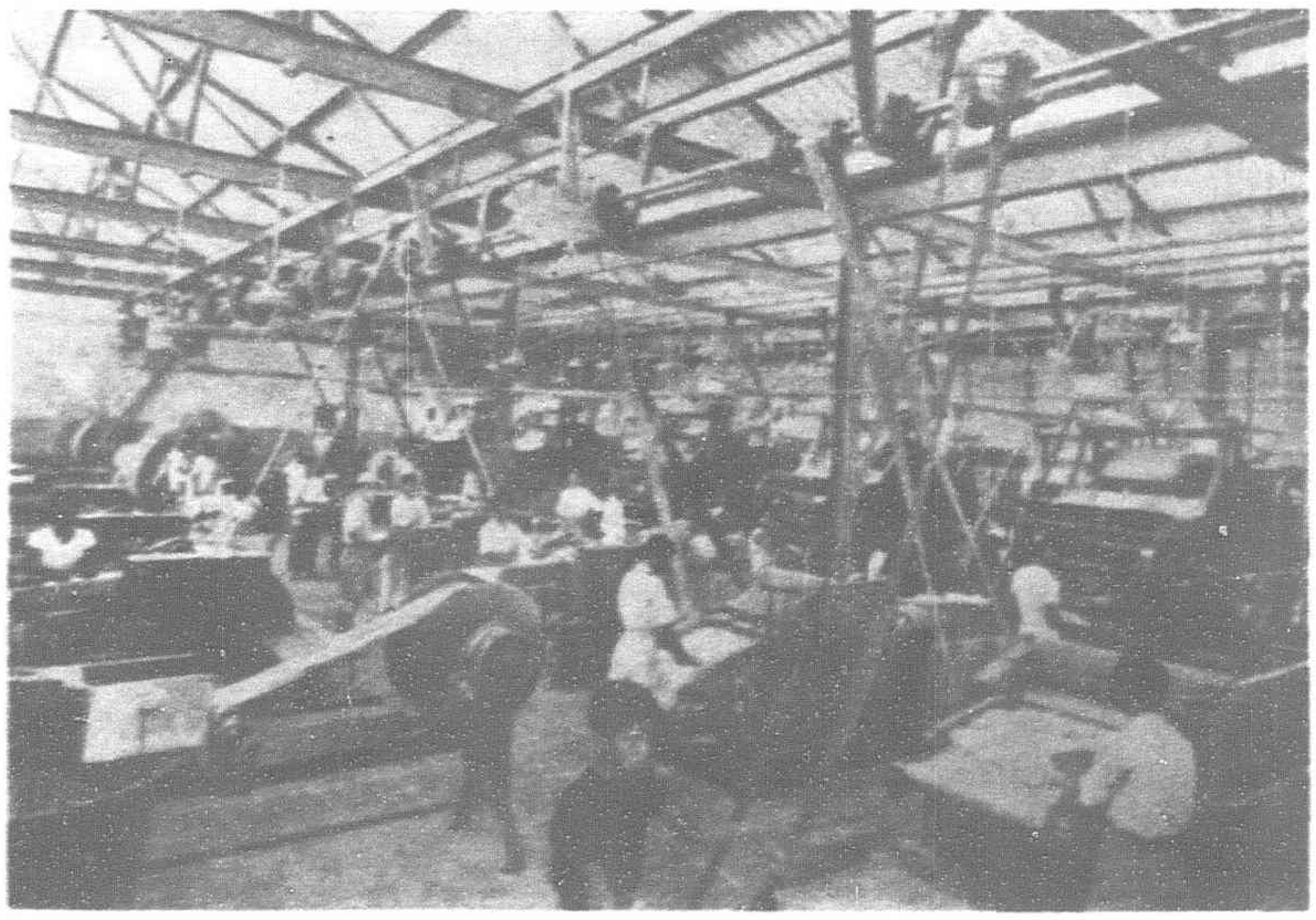
The principles underlying the spinning of silk waste are in some ways a combination of the cotton and worsted spinning processes. There are, however, important differences in the preliminary handling of the material and in the adaptation of the machinery to suit the requirements of spinning silk waste. The raw material is boiled in soap solution for a period varying between two and three hours to remove the natural gum contained in the waste and also to soften the hard-pressed material and loosen the fibres. It is then well rinsed and the water and soap removed by a hydro-extractor, previous to drying, in special chambers for obtaining a uniform condition of the material. It is then reconditioned, allowing it to absorb moisture from air to facilitate further operations during the dressing of the degummed waste.

The reconditioned material is submitted to the operations of the Dressing or Combing Department where the material is passed through suitable opening machines and then to the filling engines where the long fibres are drawn parallel to each other and cut into staple form. The staple is then passed along to the dressing frames where all the short fibres are combed out along with worn debris and other matter and dressed drafts are obtained.

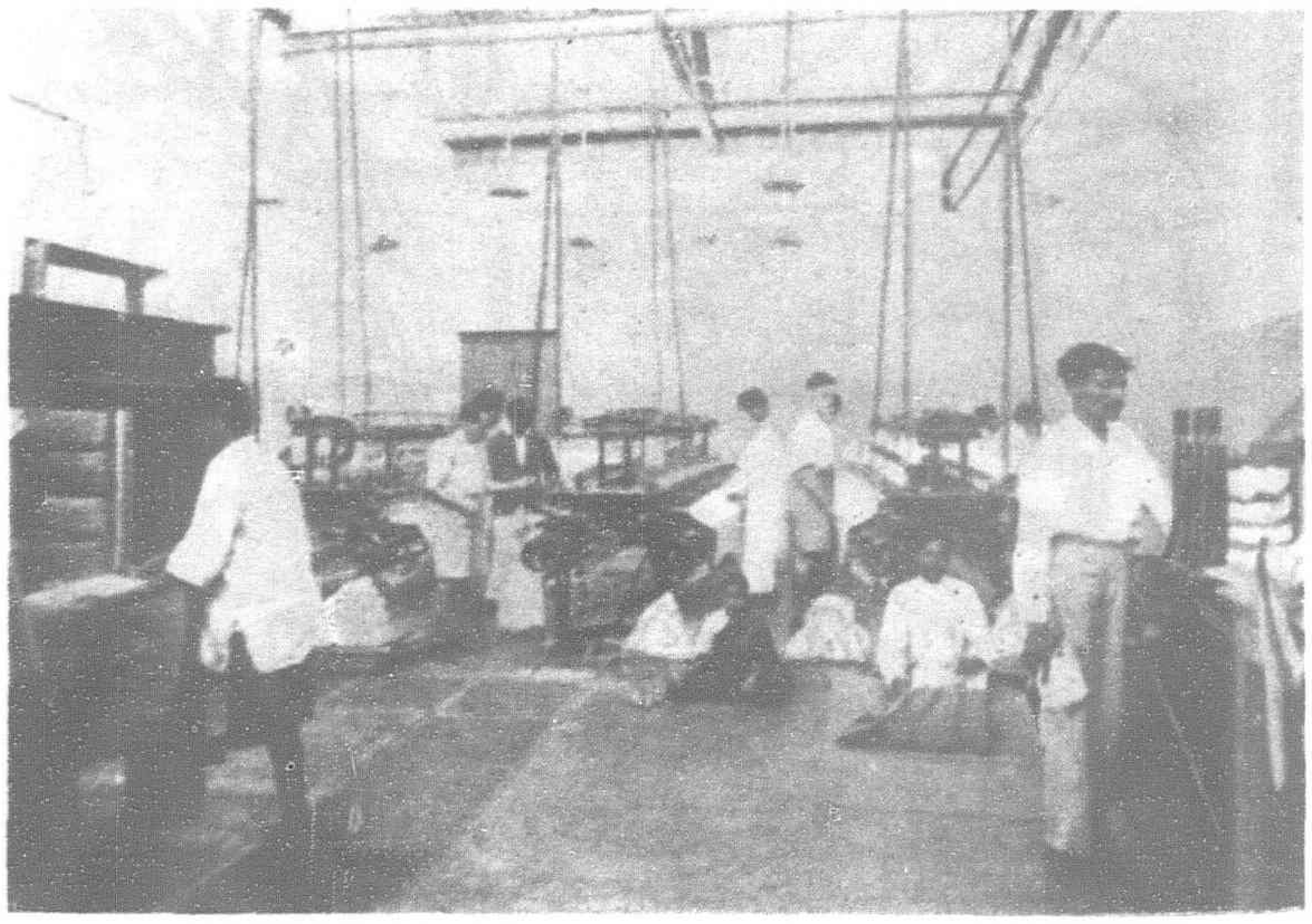
The combed material or the dressed drafts, as they are termed, is then submitted to the preparatory operations whereby the material is spread into laps. The laps are drawn into silvers on the sett frames and the slivers drawn and redrawn on drawing frames and then drafted on the slubbing and roving machines.

From the roving, the material is spun, then doubled and twisted. The yarn so made must be submitted to the singeing operation. This operation is carried on quickly enough not to allow the yarn to burn out but admits of fluffs being removed by friction and neps

(Continued on page 215)



View of the degumming section



Winding, bundling and baling department

The Dragline Excavator

By WILLIAM BARNES, M.I.MECH.E.

(The Dock and Harbor Authority)

SHORTLY after the commencement of the twentieth century, a contractor when digging a canal in Chicago, fitted a scraper bucket to a power derrick. That application of mechanical power to a modified form of horse-drawn scraper-pan or bucket was the commencement of the dragline excavator as it is known to-day† The mechanism was so crude that it was impossible to visualize, at that time, what the idea would lead to. It is, in fact, only within recent years that engineers have realized some of the many uses and advantages of this type of single-bucket excavator. The purpose of this Paper is to enumerate and comment on these uses and advantages.

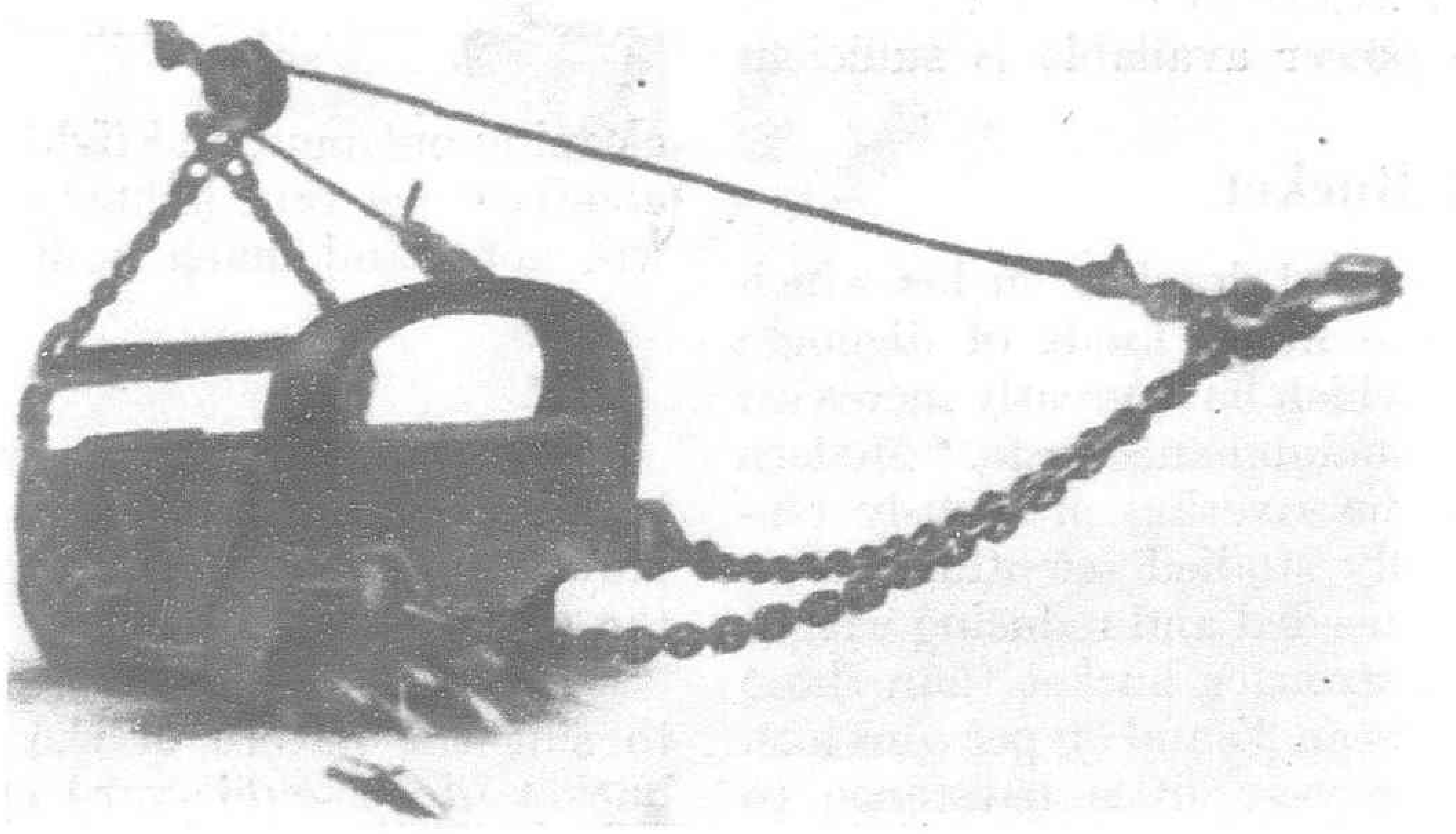


Fig. 1.—The standard bucket

One of the great advantages of a dragline compared with its predecessor and competitor, the power shovel, is that it stands on the surface of the ground and digs below its own level. For that reason it was, at first, used mainly for underwater work, such as the cleaning out and widening of rivers, drains, and canals where a machine was unable to stand and work in the bottom. The dragline excavator is now, however, used extensively for jobs where the power shovel was, at one time, the accepted machine.

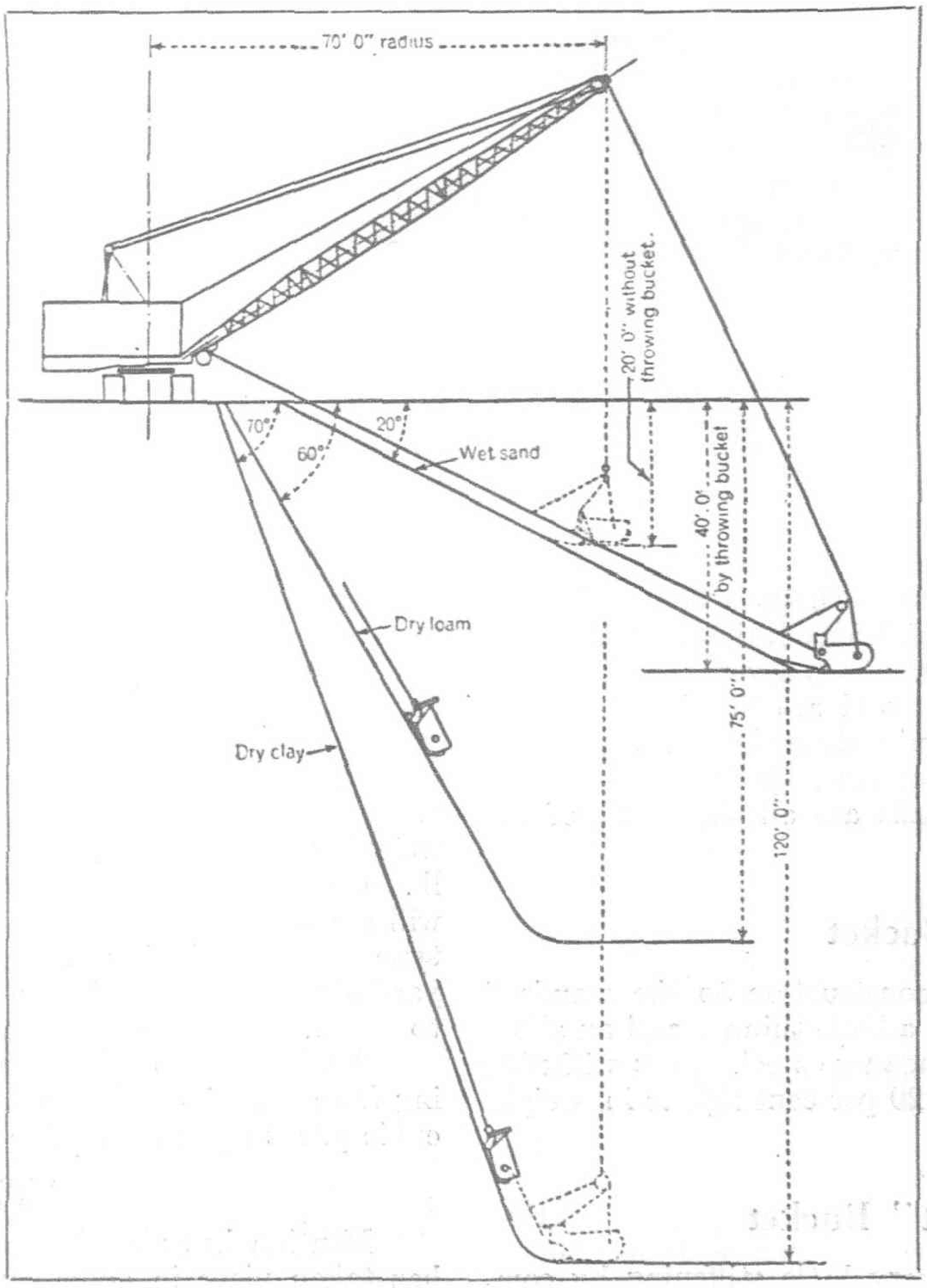


Fig. 2.—Digging depths and working ranges

Compared with that of a power shovel the boom of a dragline is very much longer, and stability has to be considered more carefully. The working load, that is to say, the weight of the bucket and contents, should not exceed two-thirds of the tipping or overturning load, which takes into account the swing of the bucket beyond the boom-head radius, when dumping under certain conditions *(see* Fig. 4).

Not only can the boom be easily varied in length, but the working radius can be altered by means of the boom-hoist gear, which should always be incorporated. A longer radius than the one recommended with the standard or maximum size of bucket can be used if the loading at the boom head is decreased by fitting a smaller bucket. When altering the length of the boom and the bucket-capacity the effects must, however, be very carefully considered, as otherwise the working speed and balance of the machine will be adversely affected. Counterweight is usually added to the rear of the machine to obtain the necessary stability. Although this takes care of the balance it adds weight to the machine, and thus necessitates either a decrease in the slewing speed or an increase in the power required for slewing. On the modern dragline, therefore, the machinery is placed behind the center-post, where it acts as counterweight. This reduces the amount of ballast required and effects a saving in the weight of the machine.

The dragline is usually employed as an excavating unit, but sometimes because of its long dumping reach, it is used both to dig and to transport the material. Good examples of this practice are the stripping of open-cast mines and the building of levees.

The dragline is a useful and adaptable machine, and improved designs, resulting from field studies and experience, have added considerably, in recent years, to its many useful applications. For instance, not long ago the recommended maximum digging depth was only about one-half of the boom-head radius or length of boom. Now, however, digging depths equal to the boom-head radius are not at all unusual and depths 50 per cent greater than the boom-head radius are being dealt with by fitting much longer booms and using buckets of improved design. Less than ten years ago the longest boom-length available on a standard half-cubic-yard machine was 28-ft., whereas 50-ft. booms are now available on this size of machine, in conjunction, of course, with smaller and lighter buckets. At one time draglines were capable of digging only comparatively easy material; now, however, they are being used for really heavy material containing rock, and may even be used for excavating rock itself when it is sufficiently blasted and broken up, and when a machine large enough for the job is employed.

Largely because of the many improvements which have been introduced their use has been extended to: brickworks, both for stripping and for digging the clay; open-cast mineral mines and quarries; alluvial mineral deposits; and large public works of all descriptions at home and abroad. Many recent successes have also been due to greatly improved designs of booms and buckets and to the use of modern materials and manufacturing methods.

Since the bucket is the "business end" of the machine it will be dealt with first.

The digging efficiency of a dragline depends considerably upon the design of the bucket, and much thought and many field studies and tests have been made to determine such things as: (1) the best position of the bucket teeth and cutting lip relative to the

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*Extracts from paper read before the Institution of Civil Engineers, on February 20, 1940, and reprinted by permission from the *Institution Journal.*

†W. Barnes, "Excavating Machinery." Ernest Benn, Ltd., London, 1928.

digging pull; (2) the angle or set of teeth upon the cutting lip; (3) the cutting width of the bucket compared with its capacity and length; (4) the correct shape and curvature of the back; (5) the balance of the bucket to obtain clean dumping; (6) strength without unnecessary weight, to stand up against, not only the digging stresses, but possibly a certain amount of maltreatment when the bucket is lowered or "thrown" into the bottom of the cut under the combined control of the hoist and drag ropes.

Manufacturers, at one time, were content with one design or type of bucket, irrespective of the work the machine would be called upon to do, whereas, at the present time, four different types and weights of buckets are usually obtainable as follows: (1) a standard bucket, for average digging; (2) a light bucket, for easy digging; (3) an "ultra-light" bucket, on small machines, for removing mud and soft materials from rivers and drains; and (4) a strong heavy bucket for digging very heavy material, including rock or minerals. This last type is available only on medium-sized and large machines when the power available is sufficient for heavy duty.

The Standard Bucket

Fig. 1 shows the latest type of standard dragline bucket which has been evolved from field experience in all kinds of digging; it incorporates many practical features which have greatly increased digging efficiency and reduced wear and maintenance costs. Modern all-welded construction has replaced the riveting previously employed, and this, together with carefully studied scientific design incorporating strength where it is most needed and reducing weight in other places, has produced a much stronger bucket than those previously used, although weighing between 25 and 30 per cent less.

Flat plates, although heavy, offer very little resistance to bending or twisting stresses, so that in this new bucket the body plate has been reduced in thickness and then strengthened by welding stiffeners where the greatest stresses and wear take place. These welded stiffeners are clearly seen around to the top inside and outside edges of the bucket, and along the sides near the bottom. In addition, square-section rubbing pieces are welded on to the underside of the bucket to protect the body plate as it is dragged along the material which is being excavated. Another great advantage of the all-welded bucket is the absence of rivet heads inside the bucket, which results in a smoother and cleaner surface for both digging and dumping.

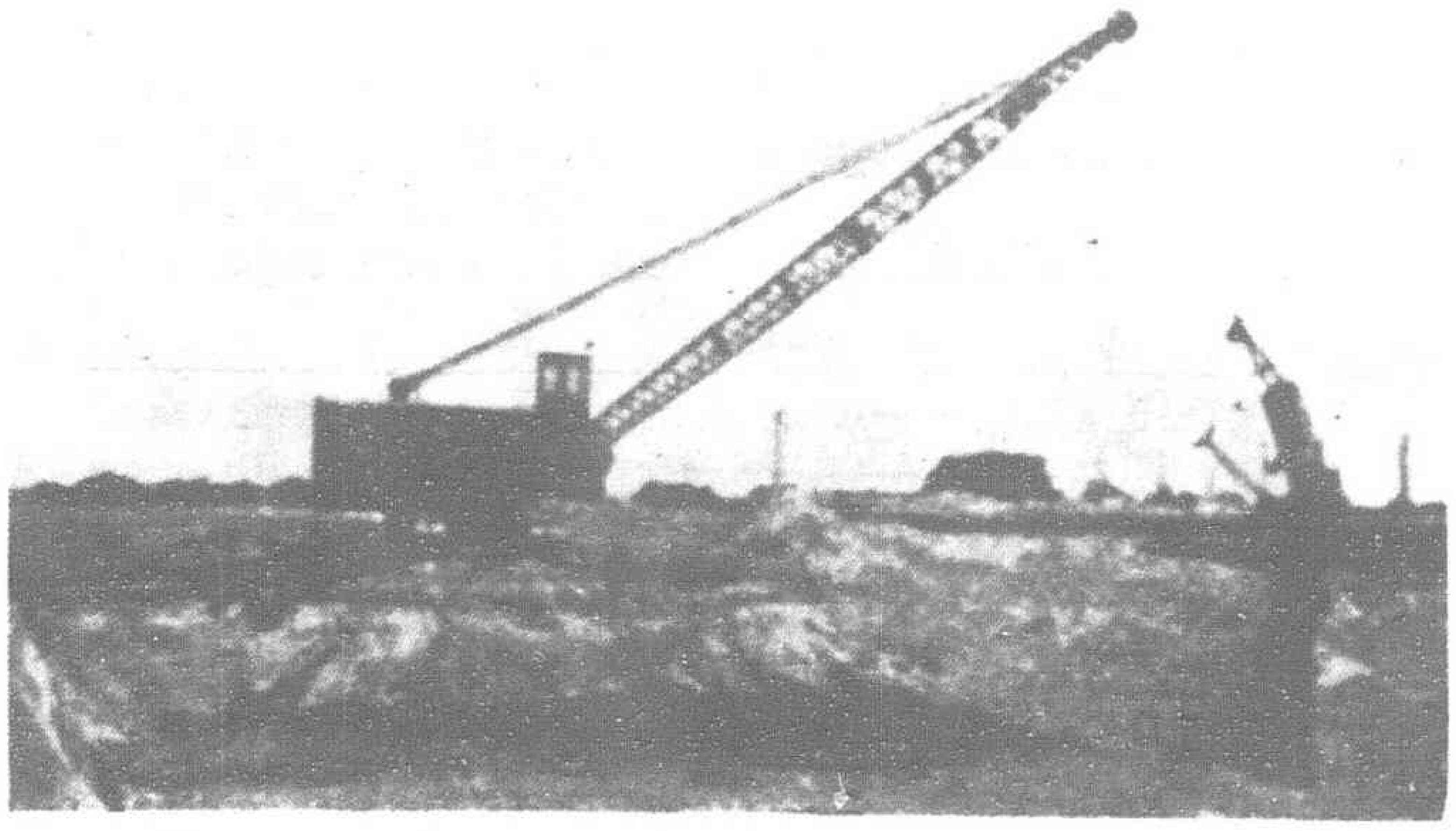

Fig. 4.—"Throwing" the bucket for dumping

Another weak feature of the old dragline bucket was the tendency for the sides to pull in at the front, where the drag chains are attached due to the resultant inward pull of the chains. This weakness has been eliminated by fitting an all-welded box-section arch and a cast manganese-steel lip which greatly stiffen the front of the bucket. The manganese-steel front has sockets into which are fitted renewable and reversible alloy-steel or high-carbon-steel teeth.

Wear on the pins and shackles which attach the drag and hoist chains to the bucket and rope connections is severe, so that large circular links of alloy or manganese steel are fitted on the new buckets, to distribute the pressure and reduce the wear.

Floating brushes on the bale lug pins, special quick-change renewable steel links, and other details are all the result of the previously-mentioned field studies.

The Light Bucket

The light bucket is similar in construction to the standard bucket, except that the body plate is a little thinner and an alloy-steel plate lip replaces the one of manganese steel. Less stiffening is employed and the bucket is about 20 per cent lighter in weight than the standard bucket.

The "Ultra-Light" Bucket

The "ultra-light" bucket has very little stiffening by comparison with the standard and light buckets and is only suitable for

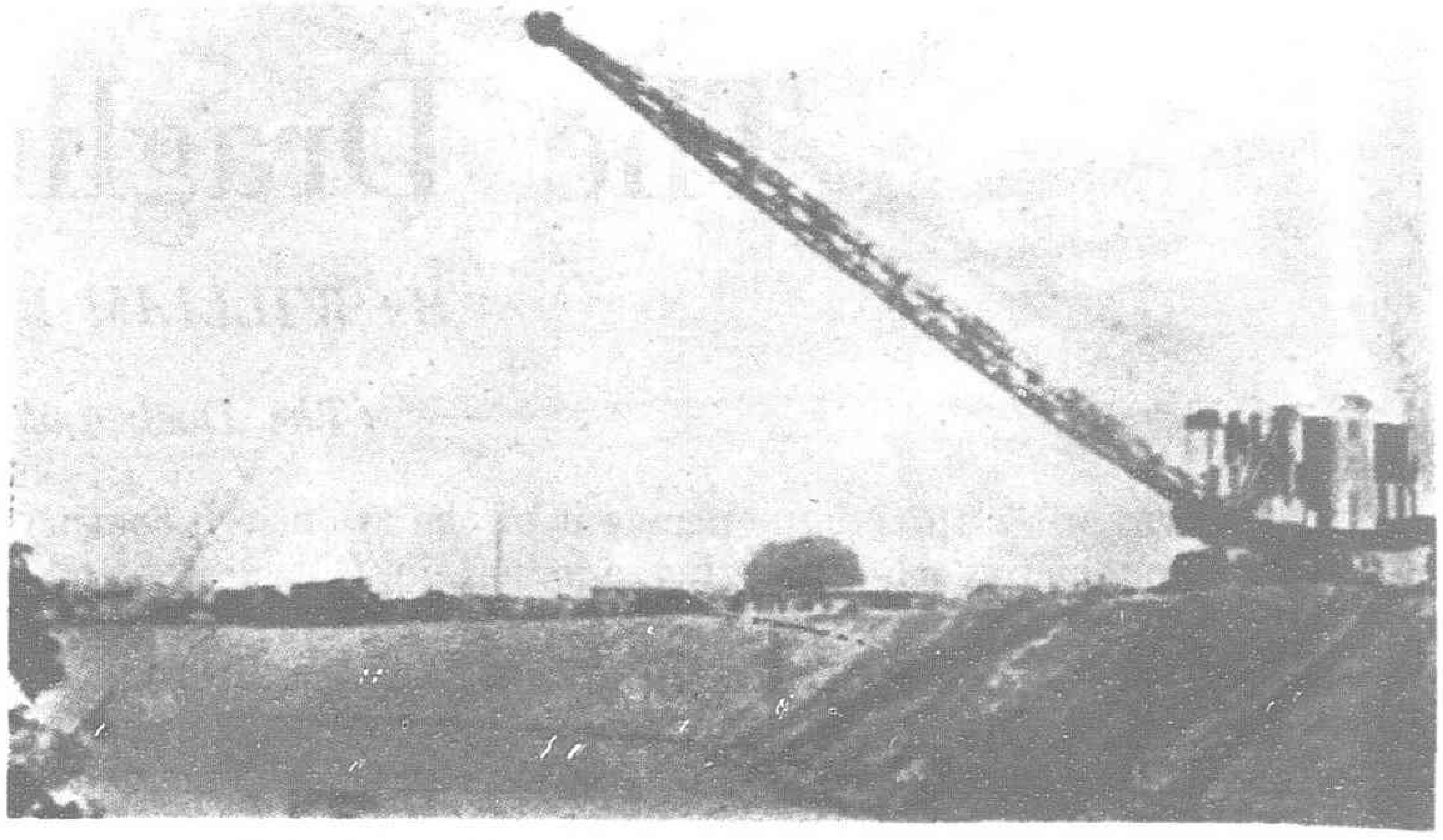

Fig. 3.—"Throwing" the bucket for digging

cleaning out mud and light materials from drains and rivers. It is about 40 per cent lighter in weight than the standard bucket, and will not stand much punishment.

The Heavy Bucket

The heavy bucket is similar in general design to the standard bucket, but is heavier and stronger. More steel castings are employed in its construction and it is about 25 per cent heavier than the standard bucket.

There are several advantages in being able to choose a bucket to suit the nature of the digging. For example, if a standard bucket of one-cubic-yard capacity and weighing 2,250 lb. is used for digging stiff moist clay weighing 3,000 lb. per cubic yard, the gross load is 5,250 lb. This can be assumed to be the safe working load. Supposing, however, that the same machine is required to dig loamy soil or easily-excavated dry clay weighing 2,200 lb. per cubic yard, then a 1¼-cubic-yard light-type bucket weighing 2,270 lb. can be used, as the 1¼ cubic yard of material will weigh only 2,750 lb.; the gross load will therefore be 5,020 lb., compared with the gross load of 5,200 lb. when using the one-cubic-yard standard bucket in heavy clay. As the loamy soil is easy to dig the 1¼-cubic-yard bucket can safely be used. It will be seen, therefore, that, by changing the bucket at a comparatively small cost, 25 per cent greater output is obtainable.

Users are recognizing that the lighter the bucket consistent with its ability to dig, the greater the efficiency or pay load, and, if a larger output is required or can be dealt with, the increase in output quickly pays for a new bucket. One user consistently uses the lightest bucket obtainable, saying that the larger output he obtains more than pays for the greater maintenance costs of the light bucket.

Sometimes digging and dumping radii are of greater importance than output, especially for cleaning out rivers or drains, and it may be possible to increase the length of boom by fitting a lighter bucket. An example is a dragline with a working radius of 40-ft. using a one-cubic-yard standard bucket weighing 2,200 lb. in material weighing, say, 2,500 lb. per cubic yard, giving a gross load of 4,700 lb. On most drain-and river-clearance jobs a light-type bucket will readily handle the material, so that if a one-cubic-yard light-type bucket weighing 1,900 lb. is substituted for the one-cubic-yard standard bucket it is quite practicable to increase the radius to 45-ft., which may be a considerable advantage.

A wide range of dragline buckets is available, capacities ranging from ¼-cubic-yard upon a machine weighing seven tons to 20 cubic yards upon a machine weighing 1,200 tons.

The Boom

Mention has already been made of the great advance which has taken place in boom-lengths during recent years, even upon machines of the same bucket-capacity.

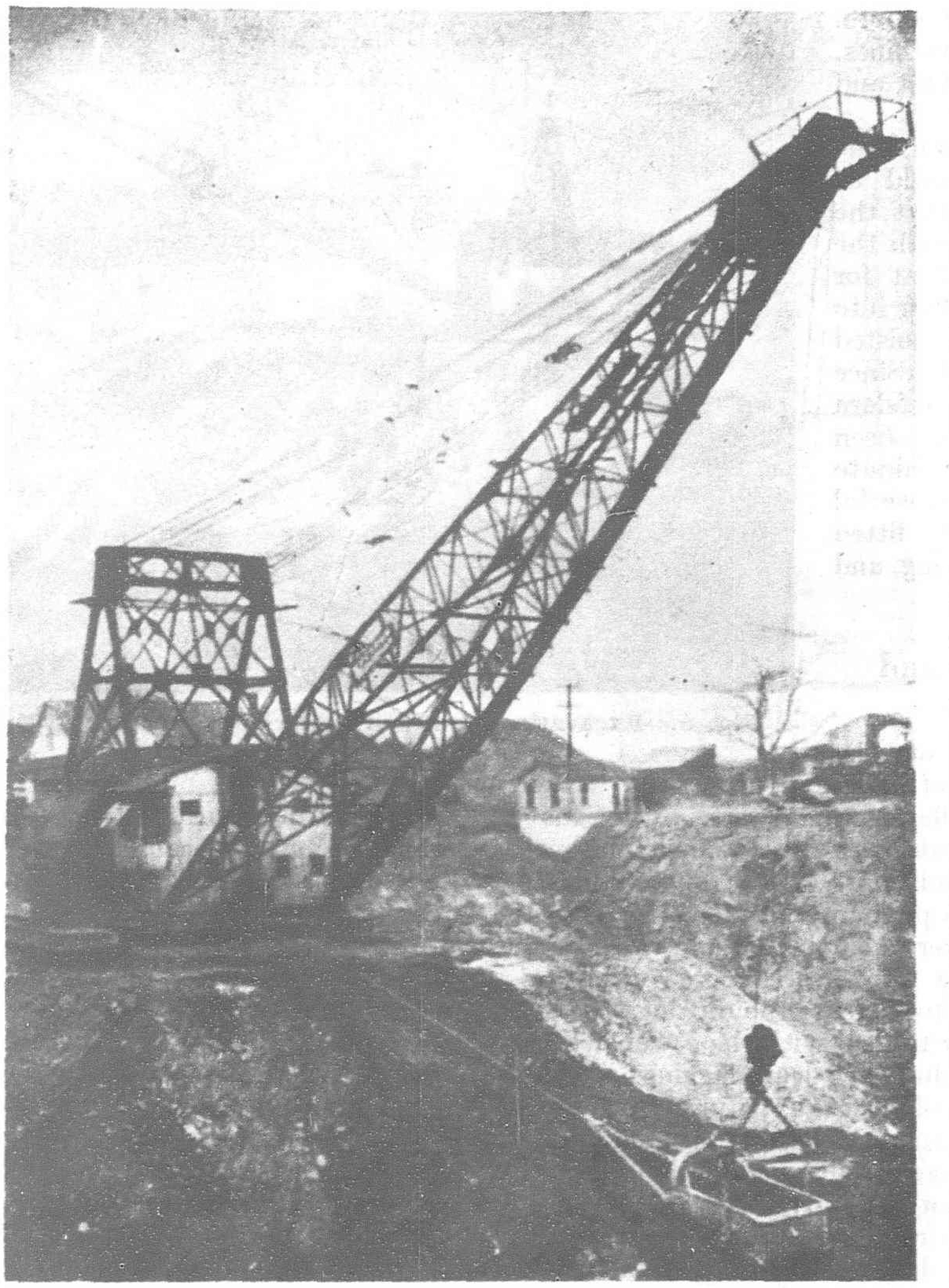

Fig. 5.—The "Walking" dragline

Formerly, all booms upon machines up to about 1½-cubic-yard bucket-capacity were constructed of mild-steel channels, and, upon larger machines, of mild-steel angles with riveted lattice bracings.

Recently, however, riveting has been replaced by welding, and this, together with improved designs and the use of modern materials, has reduced the weights of the booms. In addition, the boom fittings, especially the boom-head connections and pulleys, have been reduced in weight. Everything, in fact, has been done to obtain minimum weight with adequate strength to obtain the big working ranges which are useful features of modern draglines. Better balancing of machines has also helped the adoption of longer booms.

The modern dragline boom is usually built up of a number of sections so that its length can easily be altered to suit different working conditions. For instance, the standard length of boom upon a certain machine is 60-ft., and it is constructed of two sections; it carries a bucket of 2½-cubic-yards capacity. The same boom can, however, be increased in length to 70, 80, or 90-ft. by adding sections 10-ft. long, bolted between the two main sections, to take buckets of 2, 1½, and 1¼-cubic-yard capacities, respectively. This is frequently very useful, as sometimes, on different parts of the same job, greater or smaller digging ranges are required and therefore the booms can be altered to suit. This sometimes obviates the necessity of installing another machine.

Working Ranges

The practical digging depths of dragline excavators have increased enormously within recent years, and, in certain cases, have more than doubled, chiefly because of the use of longer booms and more efficient buckets.

Given a definite boom-length and a modern bucket, the maximum digging depth is now dependent almost entirely upon the nature of the material, including its hardness or the resistance it offers to the bucket teeth and its natural angle of repose, as shown diagrammatically in Fig. 2. In this diagram three representative materials are shown: wet running-sand with a natural angle of repose of 20 degrees; dry loam or similar material, very easy to dig, with an angle of 60 degrees; and dry clay standing up to an angle of 70 degrees.

It is apparent that wet running sand is a difficult material to deal with because as fast as the material is dug from the toe and the face it "flows" to a flat angle of repose which greatly limits the digging depth. The longer the boom the greater, of course, will be the possible digging depth. In the diagram the bucket in running sand is shown thrown well out beyond the boom-head radius, which is good practice for certain jobs, not only in shallow digging, but in faces with a normal depth. A study of Fig. 2 will make it clear how the maximum digging depth depends upon the boom-head radius and the angle of the working face.

It is only possible to excavate the dry clay shown at the steep angle if the material is not too hard to be dug with the bucket resting on the face of that angle, because, of course, the pressure upon the teeth due to the weight of the bucket is, comparatively speaking, very small. The fact, however, that digging to about this depth is practicable is proven by a dragline, with 70-ft. boom and 1½-cubic-yard bucket, which is digging clay to a depth of over 100-ft. near Bletchley.

To take an extreme example, if the material stood vertically, the bucket would also hang almost vertical on or near the face, and in that position there would be practically no pressure or weight upon the teeth to penetrate the material.

Digging Radius

Fig. 3 shows that the bucket can be thrown out well beyond the boom-head to increase the digging radius, thus enabling a wider cut to be taken. This is especially useful for cleaning out rivers and drains. The length of throw beyond the boom-head, which can easily be 30 per cent greater than the boom-head radius under favorable conditions, depends, to some extent, upon the depth of the excavation or surface of the water below the working-level of the machine. The maximum and easiest throw is obtainable when the material or surface of the water is well below the working-level of the machine, so that a normal pendulum swing from the boom-head is obtainable; otherwise the length of the pendulum swing must be reduced, by shortening the hoist rope, so that the bucket will clear the material or water at the lowest point of its swing. In deep faces, it is difficult to co-ordinate the "paying-out" of the drag and hoist ropes to avoid dropping the bucket heavily in the bottom. Under these conditions, to prevent possible damage to the bucket, it is advisable to lower the bucket at the boom-head radius and to make no attempt to throw it. It should be borne in mind that throwing the bucket increases the cycle time, so that if maximum output is required it is better to use a larger machine with a longer boom.

Dumping Radius

For dumping into wagons the dumping radius is equal to the boom-head radius as the bucket is suspended vertically from the boom-head by the hoist rope. For dumping to spoil or back into water the bucket can, however, be swung out several feet beyond the boom-head. This practice is useful sometimes to increase, slightly, the dumping radius (Fig. 4) or to spread material.

The bucket can be dumped at any height from a point immediately under the boom-head to a reasonable distance below the working level of the machine.

Digging Powers and Speeds

The digging power should bear a definite relation to the capacity of the bucket and the speed should be as high as is consistent with control of the bucket during the progress of the cut. If the speed is too high the bucket cannot be filled efficiently. Field experience under many different conditions has determined the best digging powers and speeds.

Modern practice indicates that, in average material under average digging conditions, the drag pull, which is approximately the digging effort upon the bucket-teeth, should be between 16,000 and 18,000 lb. per cubic yard of bucket-capacity for small machines, approximately 14,000 lb. per cubic yard for three cubic yard machines, and approximately 12,000 lb. per cubic yard for 12 cubic yard machines, with digging speeds between 140 and 180-ft. per minute.

To avoid loss of time in dumping, the hoisting and slewing motions should be carried out simultaneously so that the correct dumping height coincides with the end of the swing. This means that for high dumping, either on to a bank or into a hopper, the bucket has to be hoisted higher during the slewing period. Since slewing speeds are faster on modern machines the hoisting speed has been increased from about 110-ft. per minute to 150-200-ft. per minute. More powerful engines or electric motors are also fitted to obtain the greater digging, slewing, and hoisting speeds.

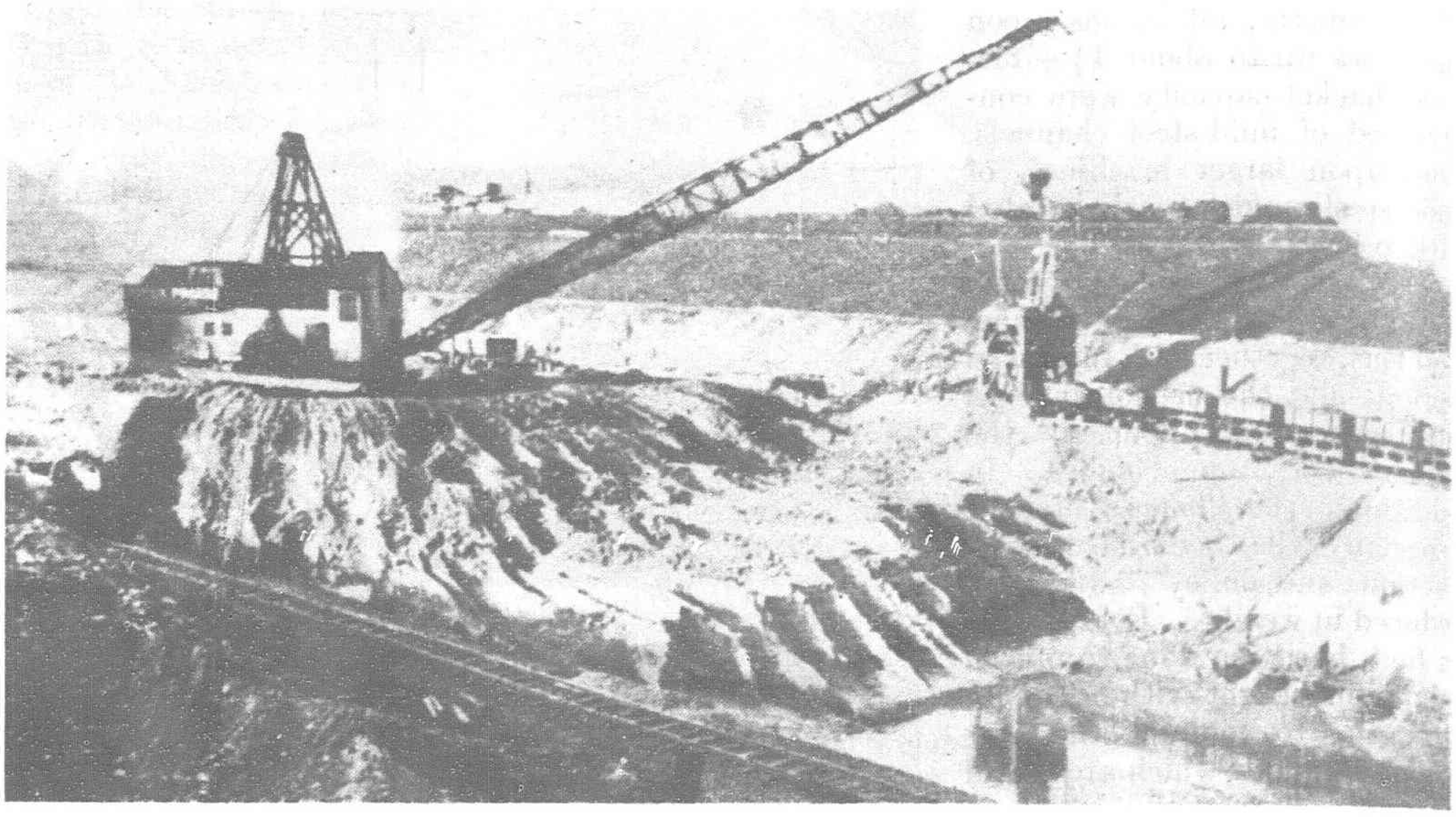

Fig. 6.—Excavating stratified material ; a "walking" dragline on the Albert Canal in Belgium

Variable Digging Powers and Speeds

Another valuable feature of the modern dragline is the provision of interchangeable drum laggings of different diameters, by means of which the digging pulls and speeds and also the hoisting speeds can be altered to suit different conditions. Thus, for hard digging, a small drum lagging is bolted to a permanent drum spider mounted on the drum-shaft to obtain a powerful cutting effort. This lagging is in halves to facilitate changing. Inversely, for easy digging a larger drum lagging can be fitted to increase the digging speed and yet retain sufficient digging power to deal with the easier material.

For very deep digging, large diameter drum laggings are available to avoid, as far as possible, coiling the rope in more than one lap or layer. This increases, of course, the digging and hoisting speeds and proportionately decreases the digging and hoisting pulls, but this, generally speaking, is not a disadvantage as, because of the deep face, a thinner cut, requiring less cutting effort, is taken to fill the bucket over the longer distance resulting from the deep face. A smaller bucket is also usually employed, because of the longer boom which is necessary to deal with the deep cut. The reduced drag and hoist pulls are therefore sufficient for the smaller bucket and a comparatively fast operating cycle is maintained, even in the deep face.

Motive Power

Internal combustion engines or electric motors are used, almost exclusively, for the motive power. They have superseded steam engines because of the difficulties and expense, with steam machines, of obtaining coal and suitable water, maintaining an adequate working pressure throughout the day, raising steam in the morning, washing out the boiler at regular intervals, and the expense of a fireman. In practice, also it is found that larger average outputs are obtainable from excavators driven by electric motors or by internal combustion engines than from steam machines. Field records show that the net working time, with steam as the motive power, averages from 65 to 75 per cent of the gross working hours compared with from 85 to 90 per cent with internal combustion engines and from 90 to 95 per cent with electric motors.

For use in permanent situations such as pits and quarries, electricity is usually favored, but contractors and users who have to move the machines about from place to place naturally prefer Diesel or petrol engines as the motive power.

The recognized practice for draglines with buckets up to two or 2½-cubic-yards capacity is to fit a continuously-running internal combustion engine, or electric motor, and to drive all the various motions through friction clutches. When the clutch-operated type of machine was first introduced a considerable amount of prejudice had to be overcome in spite of the fact, that, even when separate steam or electric power units were employed for the various motions, clutches and brakes were necessary for controlling the digging and hoisting motions and the only additional clutch required for the clutch-driven dragline was for the slewing motion. It must be admitted, of course, that when clutch-driven machines were first introduced the clutches were anything but perfect. Upon modern machines, however, the clutches are very efficient both for easy operation and long life, with consequently low maintenance costs, which probably accounts largely for the fact that at least 95 per cent of the excavators now constructed are clutch-operated. The remainder consists chiefly of large machines fitted with Ward-Leonard electric control where, if clutches were used, they would be so large and heavy that they would be difficult to operate. This applies, however, to the slewing and travel clutches, as, even upon the largest draglines, the digging and hoisting motions are necessarily controlled through power-operated clutches.

Large draglines of what is known as the "walking" type are also obtainable fitted with Diesel engines as the motive power, for situations where electric power is not available. Some of these machines weigh more than 600 tons and are fitted with Diesel engines of 600 horse-power. Upon these machines the Diesel engines, in addition to providing direct power to the digging and hoisting motions, drive generators with Ward-Leonard control which supply current to the slewing motors.

In order to obtain the greater digging power and operating speeds characteristic of modern machines, larger power units per cubic yard of bucket-capacity are now employed, so that the horse-power now ranges from 70 to 90 per cubic yard of bucket-capacity, compared with about 50 to 60 on early models.

Caterpillar Tracks

Caterpillar tracks, self-laying tracks, or crawlers, as they are variously called, are among the most useful and revolutionary features ever introduced upon excavators. They add from 25 to 35 per cent to the cost of an excavator, compared with rail wheels, but in spite of this, and because of the increased mobility and great saving in time and labor resulting from their use, they have replaced entirely the rail and road wheels previously used.

The usual bearing or ground pressure on caterpillar tracks varies from 10 to 15 lb. per square inch, which is suitable for travelling on ordinary ground without the use of timbers or wood mats. For soft ground, however, specially long and specially wide tracks are available which, depending upon the size and make of machine, reduce the bearing-pressure to 7-10 lb. per square inch.

For power shovels, long tracks are not advisable, as they do not allow sufficient working clearance around the machine for the shovel bucket, or dipper, as it is frequently called to distinguish it from the bucket of a dragline. This disadvantage does not, however, apply to a dragline and frequently it is very desirable to use the specially long and wide tracks. Sometimes the ground, as, for instance, soft marshy ground alongside a river, is too soft even for oversize caterpillar tracks and for these conditions timber mats or rafts should be used. These mats, because of the large area upon which they stand, result in a low bearing pressure of the order of 2-5 lb. per square inch, depending upon the area of the mats and the size of the machine.

The foregoing remarks refer to draglines up to about 80 tons in weight. For very large draglines whose weight runs into hundreds of tons, as high in fact as 1,200 tons, the matter of bearing pressures becomes a more difficult problem, owing to the difficulty and expense of fitting caterpillar tracks proportionate to the weight of the machine. The bearing pressure upon the tracks of the largest machines runs as high as 40-45 lb. per square inch. This can be more than halved by the use of timber mats under the tracks, but for some conditions this is still high, although it can be reduced to a more workable figure by specially large mats. This, however, entails loss of time and extra cost of labor in laying them down.

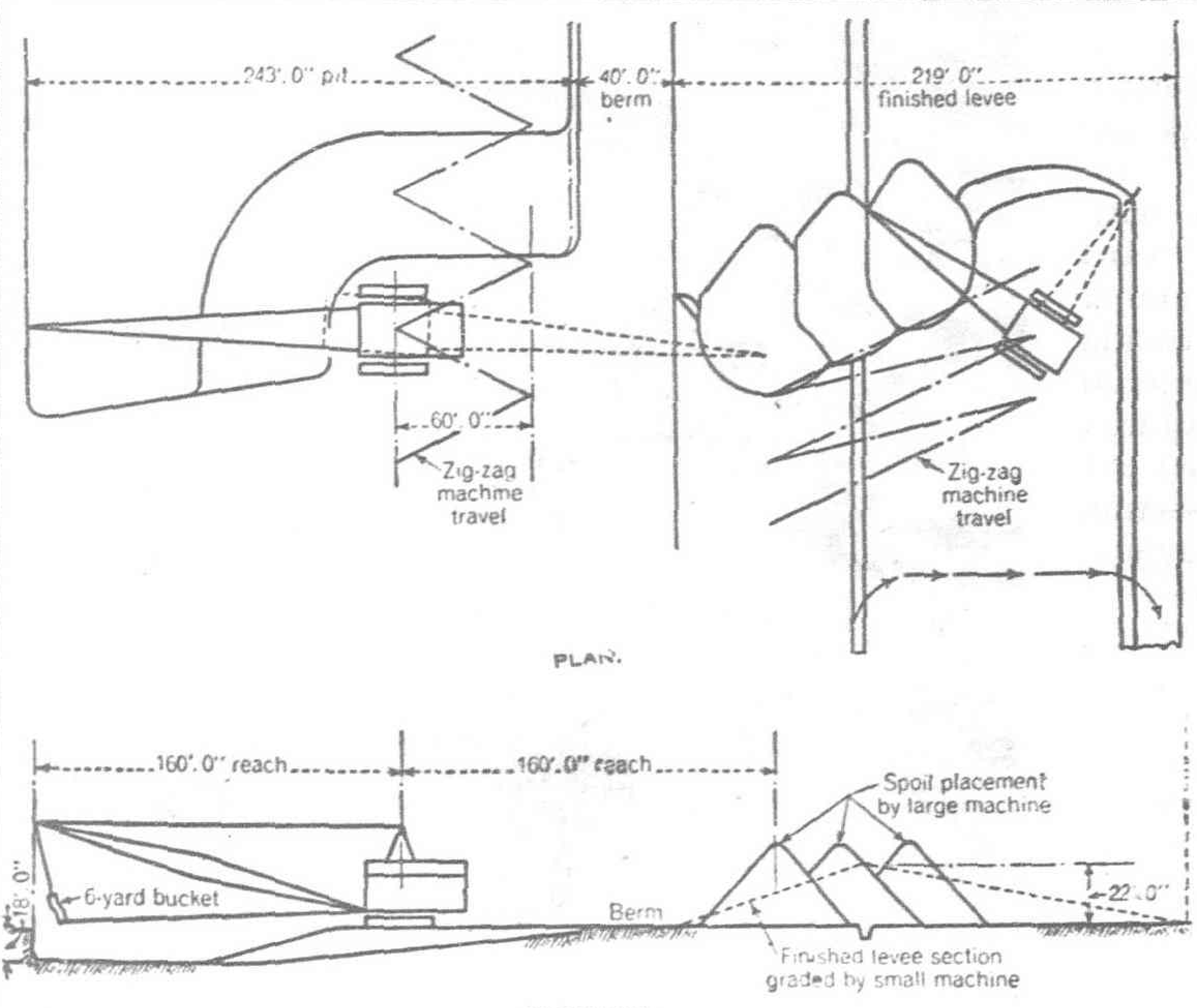

Fig. 7. Building a Lever.

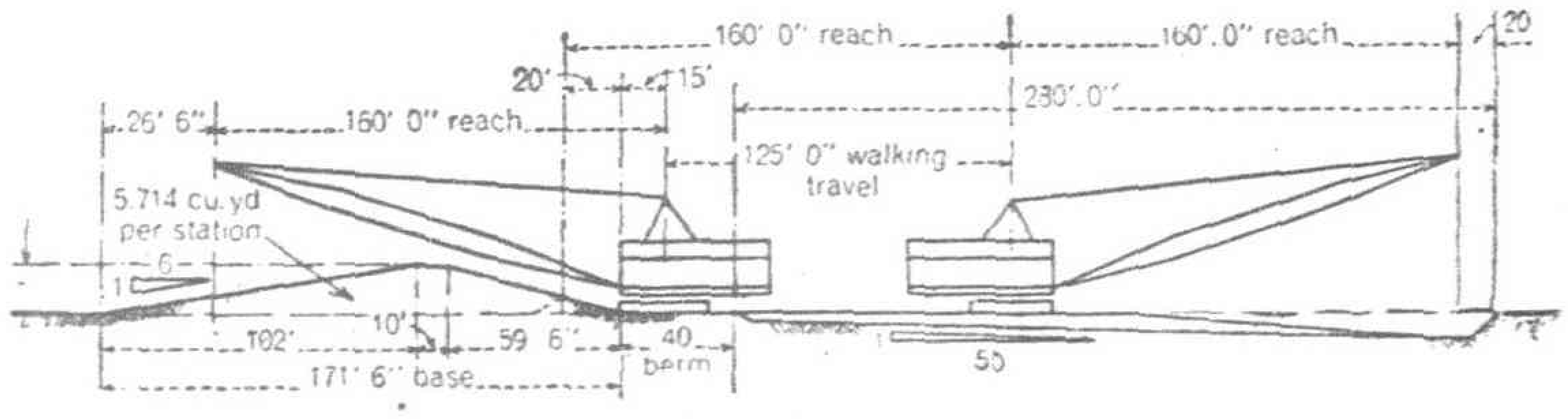

Fig. 8

The "Walking" Dragline

The problem of weight and bearing pressure on very large draglines has been solved by the use of what is known as the "walking traction" device shown in Fig. 5. Machines fitted with this device were at first used chiefly on the soft ground alongside the Mississippi River for building levees, but they are finding increasing favor for other classes of dragline work, and hundreds are in use in America. Six of them have recently been put to use in the Nigerian tin fields and five in the English ironstone mines. Two, weighing over 600 tons each, were supplied to steelworks in Germany in 1939.

When the "walking" dragline is in operation the superstructure can revolve on a big circular base which "sits" on the ground and takes the place of the more usual caterpillar tracks. This base ranges from about 18 to 33-ft. diameter (according to the size of the machine) and results in the low bearing pressure of 5-9 lb. per square inch.

Large shoes or rafts, lifted well clear of the ground when the machine is digging, are fitted to the machine, one on each side of the revolving frame. When it is required to move the machine to a new location the "walking" machinery is put into motion and the two shoes are simultaneously lowered on to the ground until the weight of the machine is transferred from the base to the shoes. As the motion continues the whole machine, exclusive of the shoes, of course, is first lifted and tilted and then moved forward a distance of 6 or 7-ft., the rear portion of the machine, meanwhile, trailing on the ground. The tilting motion of the machine ingeniously breaks the suction under the base on soft ground. A very important and useful feature of the "walking" device is that the machine can step off or "walk" in any direction by simply slewing the superstructure into the direction in which it is required to move.

A "Walking" Dragline on ths Albert Canal

Fig. 6 shows a "walking" dragline at work on the Briegden-Gellick section of the Albert Canal, which runs from Antwerp to Liège. The Albert Canal was commenced in 1930 and was to have been opened in 1939. It takes barges up to 2,000 tons capacity, cost about £100,000,000, and involved the excavation of about 100,000,000 cubic yards of material. The canal is approximately 78 miles long (the old one was 96.3 miles long) and now runs entirely through Belgian territory. The dragline, fitted with a six cubic yard bucket on a boom 135-ft. long, is shown working in a deep wide cutting near Lanaeken.

The upper portion of the material in this cutting consisted of clay and the lower portion of gravel. The clay and gravel were excavated separately by the dragline. The former was used to construct the banks on the lower levels of the canal and the latter as an aggregate for approximately 80,000 cubic yards of concrete necessary for lining the sides of the canal. It is a useful illustration of the ability of a dragline to excavate, separately, layers or benches of different kinds of material. The machine worked, almost continuously, two or three shifts (18-24 hours per day), for four-five years and excavated about 5,500,000 cubic yards at the average rate of approximately 100,000 cubic yards per month. The machine, powered by a 280 horse-power Diesel engine, weighed about 300 tons. The average output was approximately 240 cubic yards per hour, and the Diesel oil consumption was approximately 6.5 gallons per hour (about 37 cubic yards per gallon).

Levee Construction on the Mississippi River

The biggest excavation jobs in the world, as far as draglines are concerned, are the flood-control schemes in the Mississippi basin. Commenced over 200 years ago, by hand labor, they have developed in recent years to highly mechanized schemes. Floods alongside this famous river were recorded by De Soto, the Spanish explorer, as far back as 1543.

The first levee was constructed in 1717, and the Governor of New Orleans boasted that it was a mile long and 18-ft. wide. Local construction, financed by the inhabitants of this district, developed from that date until, by 1812, embankments had been built on both banks for a distance of 340 miles. Federal operations date from 1820 and from then have proceeded with increasing momentum. The Mississippi River Commission was created in 1879 and, in 1881, $1,000,000 was granted for this work. In 1927 the greatest flood on record occurred and in 1928 $325,000,000 was authorized by Congress for levee construction. In 1935 $272,000,000 was added to the amount still unexpended under the 1928 Act, and a further grant of $40,000,000 was made in 1937-38.

Since 1928 about 650,000,000 cubic yards of material have been placed in the levees over an aggregate length of about 2,000 miles.

Commencing about 1912, draglines, mostly of the "walking" type, have been chiefly used for this work because of their very low bearing pressure on the ground and their ability to sidestep and zigzag so as to obtain the necessary digging width and to dump the wide levees which have been, and are still being, constructed. Approximately one hundred excavators of this type have been, or are being, used upon the various schemes.

Because of the heavy cost of coal for steam machines and the difficulty of obtaining suitable water for the boilers, Diesel engines, even upon the largest size, are used almost exclusively.

Generally speaking the digging is very easy and, as dumping radius is of great importance, light steel or aluminium alloy booms are largely used in conjunction with lightweight buckets.

The contract price ranges from a minimum of eight cents to a maximum of 24 cents per cubic yard.

The levees are built up of material excavated from borrow pits adjacent to, and parallel to, the levees. Several methods are employed to build these big levees, and the rehandling of the material is reduced as far as possible. Two of the methods are shown in Figs. 7 and 8.

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*Extracts from paper read before the Institution of Civil Engineers, on February 20, 1940, and reprinted by permission from the *Institution Journal*.

In Fig. 7 the finished levee is 219-ft. across the base and 22-ft. high ; the necessary material is obtained from a borrow pit 243-ft. wide and 18-ft. deep, tapering off to practically zero near the berm. Two draglines are employed, a large one with a 160-ft. boom and a six cubic yard bucket for digging the material, and a smaller one, on the dump side, for taking off the peaks and spreading the material as nearly as possible to the required section. The final levelling is carried out by hand labor. The three-peaked section on the levee side is obtained by zigzagging the big machine as shown in the plan.

In Fig. 8, showing a levee 171-ft. 6-in. across the base, one dragline only is employed and it is travelled in a series of steps or stages over a distance of 125-ft. It is only necessary to spread some of the material on the far side of the levee, shown by the dimensions 26-ft. 6-in., which is beyond the normal dumping reach of the machine.

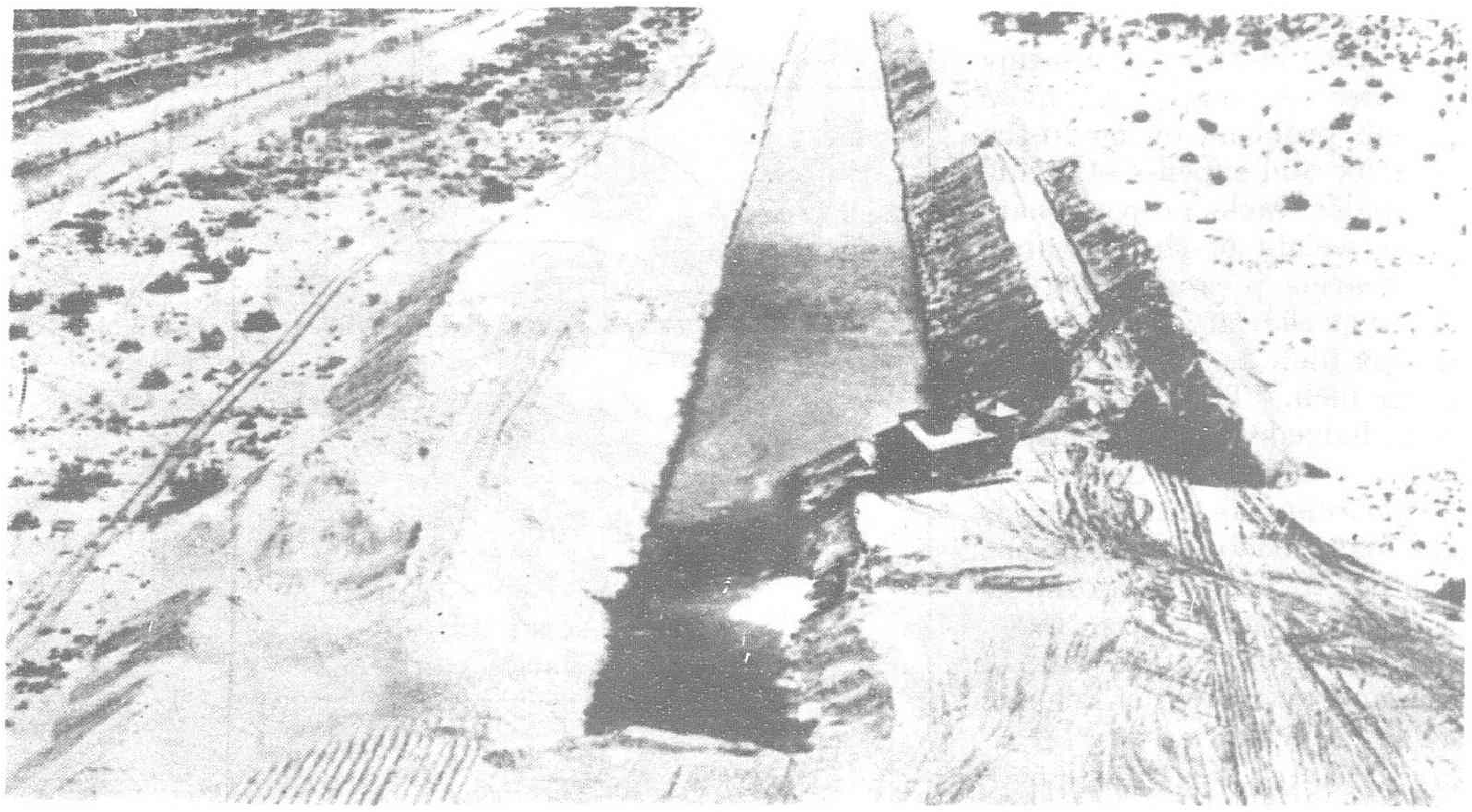

Fig. 9.—The "All-American" canal

Building a Levee

The table annexed gives representative outputs from "walking" draglines with varying boom-lengths and bucket capacities working on the Mississippi levees.

It will be noticed that in the smaller machines with shorter boom-lengths the average output per cubic yard of bucket capacity is greater, because of the shorter boom-lengths and the consequent shorter distance that the material is transported or dumped.

TABLE

Length of boom : feet.	*Capacity of bucket : cubic yards*	*Average hourly output (three 8-hour shifts per day, 7 days per week) : cubic yards.*	*Hourly average output per cubic yard of bucket-capacity : cubic yards.*	*Remarks.*
150	8	350	43	Average monthly output : 245,000 cubic yards.
150	7	280	40	Average monthly output : 195,000 cubic yards.
150	5½	240	43	Maximum output in a month : 285,000 cubic yards (an average of 400 cubic yards per hour).
120	6	390	65	—
120	6	450	75	—

The "All-American" Canal

Fig. 9 is an aerial view of a portion of the "All-American" canal* in California, which involved the excavation of about 14,000,000 cubic yards of material. The main canal is 80 miles long with a branch canal 130 miles long. The east section of the canal is 160-ft. wide at the bottom and 22-ft. deep, with slopes of 1 in 2. The deepest cut through the "sandhill area" was 115-ft.deep. The total cost was about £9,000,000 and the scheme will irrigate about 1,000,000 acres of land by means of water from the Colorado River.

The job was placed out to contractors, who tendered approximately 6d. per cubic yard for the dirt, mainly sand and silt, and from 2s. to 5s. per cubic yard for a quantity of rock which was encountered.

Seven Diesel-driven "walking" draglines were employed, with buckets of 12, six and three cubic yards capacity, together with a number of small draglines with two cubic yard buckets.

One of the 12 cubic yard draglines working 24 hours per day, excavated the enormous quantity of 5,501,000 cubic yards in 12 months.

The portion of the canal shown was excavated in two cuts, the material being dumped on each sde to form the banks. The method of working is clearly shown in Fig. 9.

In some portions of the canal cemented gravel was encountered and excavation proved very difficult. Blasting was at first resorted to, but it entailed too much delay, and a cast-steel rooter, weighing over 10 tons, was substituted for the dragline bucket.

The rooter was dragged through the compact gravel and when sufficient material had been loosened it was removed and the digging was continued with a 12 cubic yard bucket.

The World's Largest Dragline

In conclusion, it may be interesting to give a few particulars of the largest dragline so far constructed. The "walking" type is shown in Fig. 10, but the same size of machine is also supplied with caterpillar mounting. The following is a brief specification :

Length of boom : feet ..	200	225	250
Capacity of bucket : cubic yards	15	12	10
Maximum dumping radius : feet	214	240	265
Working weight	Approximately 1,000 tons		
Electric drive	Ward-Leonard control		
Digging motors	500 brake horse-power		
Diameter of base on "walker"	45 feet		
Bearing area	1,590 square feet		
Bearing area with caterpillar mounting	384 square feet		
Approximate time for one cycle of operations ..	65-75 seconds		
Output, depending on material and working conditions	350-650 cubic yards per hour with 15-cubic-yard bucket		
Current consumption ..	0.5.0.75 kilowatt-hour per cubic yard		

Fig. 10 clearly shows the "walking" device, the operator's cabin, the large superstructure, the long boom, and the wide-spread feet.

The Author thanks a number of excavator manufacturers for their assistance in supplying information or photographs, or both.

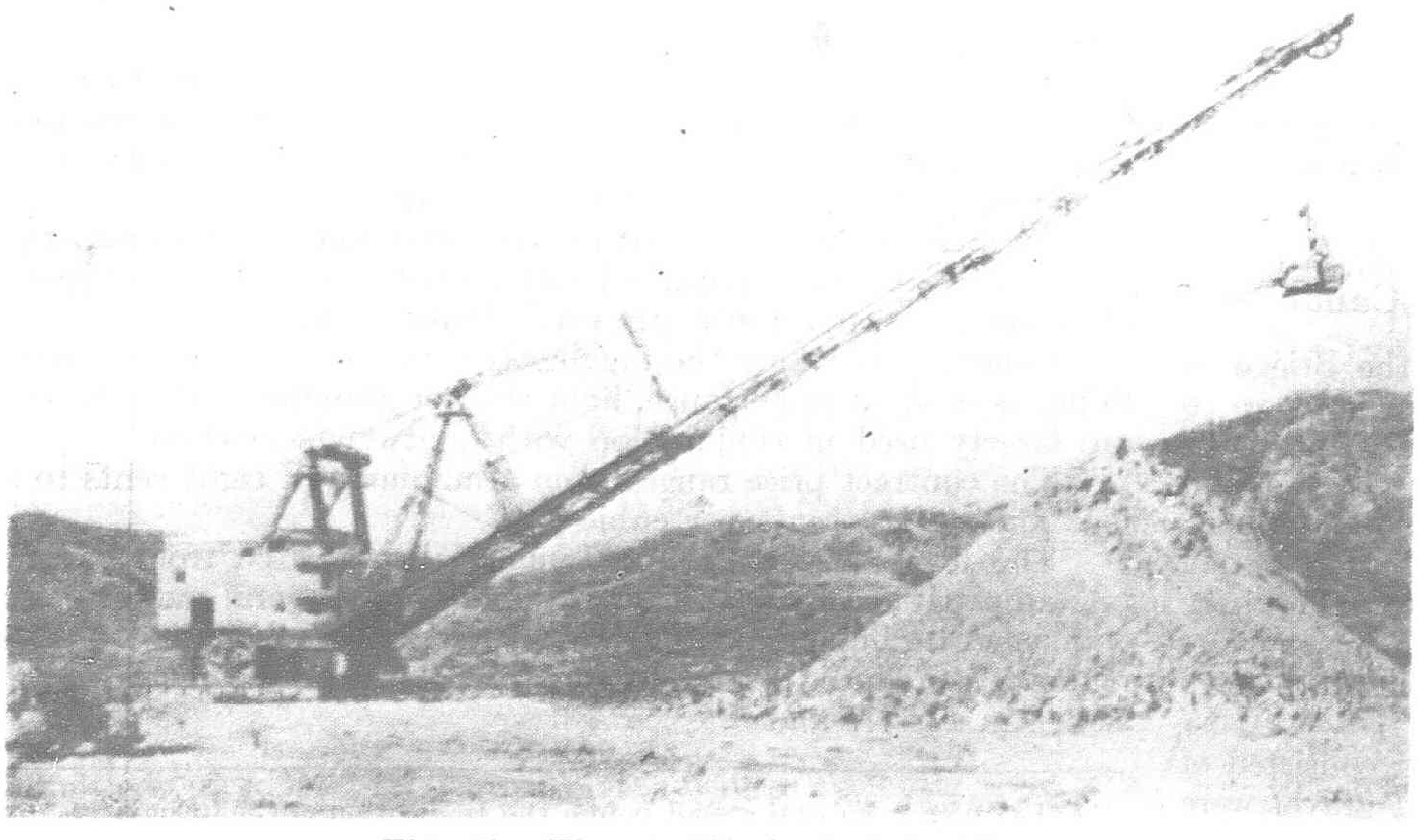

Fig. 10.—The world's largest dragline

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*"The All-American Canal," *The Engineer*, Vol. clxvii. (1939) p. 696 June 9 and p. 728 June 16).

Expansion of Japanese Shipping

(The Shipping World)

A SMALL booklet in the English language on "The Shipping Industry" has been published by the Foreign Relations Council of the Japan Economic Federation. It is full of facts and figures. It is an admirable statement of what has been achieved and what hopes are entertained for the future, now that Japan is still, after over three years, engaged in military operations in China and is a partner, if only in a limited sense, with those other two Sea Powers, Germany and Italy.

It is recorded with justifiable pride that Japan now ranks third among the shipowning nations "but," it is added, "the nation can ill afford to rest satisfied with this." "The vessels which hoist the flag of the bright sun," it is declared, "are determined for even more brilliant activities, making the most of the repercussions of the European war on the world shipping industry."

Japan was anticipating a shipping boom in 1931 when she became embroiled in China, while events in Europe brought increased anxieties, with restrictions on shipping as well as trade throughout the world.

In the Japanese shipping market, nearly six million tons of hull are available to-day—a rise of over a million and a half tons (or 33⅓ per cent) since June 1937. This has, nevertheless, proved insufficient to meet the heavy demand of the near-seas traffic, and only a few Japanese vessels have so far been diverted to the more remunerative overseas carrying trade. Again the general rise in ocean freight rates has in no wise been followed by a rise in the rates for shipping space between Japan and the Continent, which latter charges have remained pegged by the control laws now in force to the old levels.

It is hoped that with an improvement in the Chinese situation, many of the Japanese ships now operating in the China and Japan seas will be placed in the ocean services to contribute to a further expansion of Japan's maritime prestige in world trade. In this connection, one aspect that is causing no little concern cannot be overlooked, and that is the slowness with which marine construction progresses, attributable to a shortage in technical services and in labor and material. Every means, however, is being taken to overcome the manifold difficulties.

The three Maritime Laws approved by the Imperial Diet at its 74th session in March 1939 were intended to strengthen the existing control and to further the healthy expansion of the Japanese shipping industry. The first of these measures, the Shipbuilding Industry Law, went into force on December 1, 1939; the Shipping Associations Law was promulgated on December 21 of the same year and the Ship Construction Refinancing and Loss Indemnification Law, on January 1, 1940.

Ambitious Plans for Expansion

The greater part of this booklet and the most interesting to the foreigner deals with the measures which have recently been adopted for the expansion of the maritime industries. It is pointed out that a review of the status of the ten principal Japanese shipping companies based on tonnage owned at the end of October 1939 discloses that the most conspicuous changes in recent years were the disappearance from the list, through amalgamation into the Nippon Yusen Kaisha in August 1939, of the Kinkai Yusen Kaisha (the Near-Seas Shipping Company) which had always maintained fifth or sixth rank on that list since the company's establishment in March 1923 and the placing as eighth of the Toa Kaiun Kaisha (the East Asia Shipping Company), organized on August 5, 1939.

Outside of the merger already referred to, the Nippon Yusen Kaisha has largely added to its own tonnage by new construction so that the margin between it and the Osaka Shosen Kaisha, which comes second in the placements, has been increased to 255,000 tons. The Osaka Shosen Kaisha is ahead of the Yamashita Steamship Company (third) by more than 324,000 tons. The Kita Nippon Kisen Kaisha (the North Japan Steamship Company) which ranks tenth, owns no more than some 82,000 tons, or about 1/9th of the tonnage of the Nippon Yusen Kaisha. The latter company and the O.S.K. may therefore be considered representative of the shipping industry of Japan. The relative positions of all these shipping companies are shown in the following table:

RANKINGS OF TEN LARGEST JAPANESE SHIPPING COMPANIES

*(as at the end of October 1939).**

Company	*No.*	*Tons gross*
Nippon Yusen Kaisha	125	778,298
Osaka Shosen Kaisha	101	522,613
Yamashita Steamship Company	35	197,743
Dairen Steamship Company	54	191,844
Mitsui and Company	33	168,404
Kawasaki Kisen Kaisha	31	152,439
Kokusai Kisen Kaisha	21	150,638
Toa Kaiun Kabushiki Kaisha	58	140,767
Tatsuma Kisen Kaisha	19	84,248
Kita Nippon Kisen Kaisha	32	82,587

*Based on a survey made by the Shipping Bureau of the Communications Ministry, but not covering vessels under 1,000 gross tons.

Returns on Shipping Capital

As to the dividends paid on Japanese shipping of late years, it is recorded:—

Without a single exception, the companies were obliged to pass up dividends from 1930 until the second half of 1932. However, the outbreak of the Manchurian incident in the latter part of 1931 and the reimposition of the gold embargo towards the close of that year brought about an expansion of the Japanese Manchurian trade and a phenomenal advance of Japanese merchandise into world markets. These favorable developments were closely followed by intensified rearmament by the leading Powers of the world. These circumstances made for recovery, and some of the companies were able, in 1933, to reinstate dividend payments, though at low rates.

Improvement continued until July 1937, when the China Affair broke out. It was then feared that prospects would be unfavorable, at least for some time. This, however, was not the case due to the concerted efforts of all the shipping companies to rationalize their operations and also to a marked increase in cargo movements to the Asiatic continent.

The occurrence of the present European war has undeniably given a rare opportunity to the Japanese shipping industry to expand its prestige and to acquire at the same time larger amounts of foreign currency than hitherto. Yet the chances of an advance by Japanese shipping in the overseas carrying-trade are extremely meagre as previously stated. Notwithstanding their improved earning position, these companies, in consonance with the low price policy of the Government under the emergency situation, have voluntarily refrained from declaring dividends at the high rates paid during the Great War. The dividends of the ten largest concerns have consistently been kept below the ten per cent per annum level in recent years.

Some fresh light is shed on the measures which have been taken for the improvement of shipbuilding. In 1932 when the shipping industry of Japan was still suffering from depressed conditions, the Government, as a remedial measure, decided to improve the quality of shipping by scrapping a comparatively large number of old vessels and replacing them by modern constructions. At the 63rd session of the Imperial Diet, a bill for the subsidizing of the shipbuilding industry was introduced and passed and the measure was put into effect on October 1, 1932. In all, a sum of 14 million yen was disbursed by the Government for the improvement of marine construction. Approximately 302,500 gross tons of new ships were built under the scheme and old tonnage to the extent of 415,500 done away with. It had originally been planned to discard half a million tons of out-of-date vessels, but the full accomplishment of the project had to be deferred owing to a shortage of bottoms arising from a subsequent sudden recovery in world shipping. High speed freighters (14 to 20 knots) made up the bulk of the new additions which considerably added to Japan's prestige in world maritime trade.

RESULTS OF SHIP IMPROVEMENT SCHEMES

	1st scheme	*2nd scheme*	*3rd scheme*
Ratio of new building to scrapping of old vessels ..	1 ton against 2 tons	1 ton against 1 ton	1 ton against 1 ton
Construction of new ships :			
planned	200,000 tons	50,000 tons	50,000 tons
actually built	31 ships 198,989 tons	11 ships 52,718 tons	9 ships 50,891 tons
Scrapping of old ships :			
planned	400,000 tons	50,000 tons	50,000 tons
affecting	94 ships 399,240 tons	11 ships 52,718 tons	13 ships 47,294 tons
actually scrapped ..	94 ships 399,240 tons	2 ships 16,677 tons	Nil
Subsidy granted	Y11,000,000 (at the rate of Y55 per ton of new ships)	Y1,500,000 (at the rate of Y30 per ton of new ships)	Y1,500,000 (at the rate of Y30 per ton of new ships)
Date of enforcement	Oct. 1, 1932	April 1, 1935	June 1, 1936

But the Japanese Government was not satisfied with these aids to shipbuilding, but determined to subsidize the building of "vessels of superior class." As the original scheme had dealt mainly with cargo vessels, the new proposal was concerned with liners. The aim of the new measure was the construction of 150,000 tons of passenger vessels each grossing more than 6,000 tons with a minimum speed of 19 knots and a like aggregate tonnage of freighters and oil tankers —in all 300,000 tons—at a cost of 50 million yen. When the project had been completed, it was decided that, in order to create a balanced fleet, larger passenger liners, ships representing the prestige of the nation, should be laid down. "The Government therefore introduced to the Imperial Diet at its 73rd session a bill calling for grants towards the building of "super-de-luxe" passenger carriers, which bill was approved in March 1937. It called for the construction of two vessels, each of at least 26,000 tons, having a speed superior to 24 knots, and to cost 28.8 million yen. The Nippon Yusen Kaisha was awarded the order, and the *Kasiwara Maru* and *Izumo Maru* will be completed in 1942 and placed on the Trans-Pacific (San Francisco) route. These ships will gross 27,700 tons each."

Ingenious Method of Finance

The Japanese authorities adopted an ingenious method of finance. The original guarantee was limited to the payment of interest on five million yen. This was raised to 15 million yen the year following and again to 30 million yen in 1936. When 20 million of the last-named sum had duly been absorbed, the scheme was abolished on March 31, 1937, to be immediately replaced by one in which the Government undertook to indemnify up to 70 per cent of the amount any losses (within a limit of 70 million yen in all) which might be sustained by those who had advanced funds for purposes of shipbuilding. Interest rates on such loans were likewise guaranteed, but were reduced from five per cent per annum to 3.7 per cent. Ships to be constructed under this plan were steel freighters of 4,000 gross tons or more with a maximum speed of at least 13.5 knots; but it was likewise made applicable to vessels of half that tonnage making 11 knots or more, providing approval was first obtained from the competent Minister. In view of increased applications for loans under this arrangement the limit was raised in 1938 to 150 million yen, the whole of which has been disbursed.

This financing contributed in a great measure to the increase of shipping, but an acute shortage of bottoms since the outbreak of the Sino-Japanese Incident caused the passing of the Law concerning Shipbuilding Fund Grants and Loss Indemnity by the Imperial Diet at its 74th session, which Law went into effect on January 1, 1940. For the first year during which the Law is to operate, the loan limit is fixed at 90 million yen and the annual rate of interest is to remain at 3.7 per cent. Advances may be made by banks, trust and insurance companies. The enactment relates in particular to the building of steel freighters or freight-and-passenger carriers of 4,000 gross tons or more. The measure has finally enabled ship operators to formulate at ease their plans [illegible] additions or renewals in line with the varying trends of world shipping.

Increased State Control

One chapter in this booklet, and not the least important, is concerned with the increasing State control of the industry. The shortage of tonnage was accentuated by the Chinese operations, and with a view to the co-ordination of shipping policy and the rationalization of tonnage, the seven leading shipowning companies organized the Autonomous Shipping Federation in July 1937.

Freight rates and charterage for the principal classes of cargoes out of Japan were standardized under the auspices of the Federation. In March 1938, the Autonomous Shipping Federation, co-operating with the Nippon Shipowners' Association, established the Shipping Market Measures Council to afford greater stability to the shipping market in general and to make for the better distribution of vessels.

The Council was in constant touch with the Government and exercised a control over the entire shipping industry. But as stricter control became more urgent, it was imperative to replace the autonomous direction by State control. This became effective on September 1, 1939, with the appointment of the Shipping Control Commission. It was intended that the Commission act only in a temporary capacity pending the final appointment of much larger and permanent bodies to be known as "The Shipping Associations" organized under a Law of that name approved by the Imperial Diet at its 75th session in March 1939. The law went into effect on December 21 of the same year.

Shipping Associations were to be formed for the control and/or distribution of:

(*a*) Steamers of 1,000 tons or more; (*b*) steamers ranging from 100 to 1,000 tons; (*c*) A-class shipping brokers (i.e. brokers who are not bound by a freight tariff and who are otherwise engaged in the chartering, selling or purchasing of vessels); (*d*) sailing vessels; (*e*) concerns operating lighters, tugboats, etc.; (*f*) B-class shipping brokers (i.e. brokers bound by the regular freight tariff); (*g*) steamers under 100 tons. In the case of (*a*), (*b*) and (*c*) there would be one association to cover the whole of Japan; under (*d*) the control would be decentralized and 35 zones established while 14 zones would serve for (*e*) and seven for (*f*).

Shipping and related enterprises in Japan have thus been placed under uniform control by law, and the "outsider" who had been the scourge of the industry has been eliminated. This will make for greater soundness in operation and enable shippers to face all demands imposed upon them even during periods of depression.

Rationalization of Services

Since the end of December 1939 the Shipbuilding Industry Law has been effective.

The Shipbuilding Industry Law, which passed the 74th session of the Imperial Diet in March 1939, provides for the building of superior class but economic vessels to keep pace with the expansion of shipping and to ensure stability in the shipbuilding industry. The law went into effect on December of the same year.

It is a supervising and control measure relating to the establishment, transfer and closing (where necessary), of shipbuilding enterprises. It also stipulates for uniform control by the organizing of associations as in the case of shipping itself. Moreover, the law contains provisions pertaining to the use of domestic materials in construction, standardization of grades, adoption of standard types of ships, and possible mutations in the shipbuilding plans.

In association with all these measures, steps have been taken to control the services between Japan and China, which has involved the organization of the East Asia Shipping Company, consisting of the property of seven existing concerns engaged in the China trade. It has a capital of no less than 73 million yen fully paid up and owns 59 ships of 144,646 tons gross. "In order to control the tramp services between the two countries and thus ensure the smooth operation of the lumber, coal, iron ores, salt, etc., carrying trade, preparations are under way to organize this category of shippers into an association to be named the Toa Unyu Kumiai (East Asia Transportation Association). This measure will complete the plans made in connection with the control of shipping facilities between Japan and China.

After describing the control of services between Japan and Manchoukuo attention is turned to the recent position of Japanese shipping.

The tramp rates abroad have risen considerably since the outbreak of the European war. Thus freight on soya beans from

Dairen to European ports went from 24 to 130 shillings and rice shipments from Saigon to Great Britain and the European Continent, which up to then paid no more than 25s. 6d., went to 90s. Such developments in overseas shipping markets presented Japan with a rare opportunity to earn foreign exchange. She was, however, unable to avail herself of this owing to the huge requirements of the East Asia traffic which made it impossible to divert ships from that service. In fact, those deep-sea ships which had been transferred temporarily to the China trade could not even be spared.

Freight rates in the near-seas services have altered but little since the European War as this class of shipping has been placed under rigid control. For instance, the standard freight rate on shipments of coal from Wakamatsu (Kyusha Island) to Yokohama which was yen 4.80 in August 1939 has remained at the same level. Yet in March 1938 it was yen 5.60. Moreover, under the terms of the Imperial decrees prohibiting a rise in commodity prices, transportation charges, salaries and wages above the respective levels prevailing at September 18, 1939, freight rates on all shipping routes, excepting the overseas services, have been officially fixed.

Again in conformity with the low-price policy of the Government, unreasonable increases are not permitted in the deep-sea freight rates. Current conditions in the shipping industry are thus fundamentally different from those which obtained at the time of the Great War when no restrictions whatever were placed on freight charges.

As to the distribution of Japanese shipping, it is recorded that Japanese shipping in November 1939 aggregated 5,651,173 tons deadweight (4,315,283 tons gross), including ships owned or chartered by the N.Y.K. and the O.S.K. companies, but exclusive of ships under 2,000 tons deadweight. Detailed figures are given in the table below :—

Distribution of Japanese Vessels in Early November, 1939

		Overseas service	*Nearseas service*	*Total*
Vessels owned or chartered by N.Y.K. and O.S.K.	*number*	(112)	(156)	(268)
	tons gross	885,800	540,440	1,426,240
	tons d.w.	1,127,445	671,671	1,426,240
Companies other than N.Y.K. and O.S.K.	number	(95)	(484)	(579)
	tons gross	735,326	2,153,717	2,889,043
	tons d.w.	980,434	2,871,623	3,852,057
Total	number	(207)	(640)	(847)
	tons gross	1,621,126	2,694,157	4,315,283
	tons d.w.	2,107,879	3,543,294	5,651,173

It will be seen that the N.Y.K. and the O.S.K. were concerned more with the overseas services than with the nearseas routes. The table also indicates that the nearseas maritime trade absorbed 60 per cent of the total Japanese tonnage "thus proving the immense effort Japan is making to establish a new order in East Asia."

Distribution of tonnage owned or chartered by the two major shipping companies of Japan indicates a slight contraction in comparison with the days immediately preceding the outbreak of the Sino-Japanese Affair, but has been little altered with the coming of the European war.

After touching in 1932 the lowest record of recent years, Japan's net receipts from its international shipping business has increased yearly to Y193,860,000 in 1936, or double the 1932 returns. As the value of cotton textile exports for the same year 1936 was Y483,591,000 and that of raw silk shipments aggregated Y392,809,000, it will be seen that shipping revenues rank third on the list of Japan's international receipt account. Hence the importance of the shipping industry in Japan's international trade balance. With the advance in freight rates that have taken place since the outbreak of the present European war, it is expected that future shipping revenues will be considerably expanded.

Manufacture of Spun Silk Yarn in Mysore

(Continued from page 206)

burnt out. The yarn that is produced is very uniform and of a shining color.

The next stage is the conversion of the yarn into hanks and then bundled up for being packed and baled. These operations which are described pertain to the manufacture of spun silk yarn.

Dressing

During the course of dressing of silk waste, after the extraction of the drafts suitable for the manufacture of spun silk yarn, a residual material is left which is called " noils " and which looks much like carded cotton but with more lustre. This is taken and treated in a manner somewhat similar to woollen spinning. This material, viz., the noils, is teased, blown and then, by means of carding machinery, is converted into laps and by means of condenser card it is formed into slubbing which is spun on spinning frames. The yarn produced is of coarse quality but is capable of being utilized for making very attractive suitings, specially suited for summer, and in making draperies and novelty yarns for preparing fancy cloths, etc. Silk noils are blended with wool and they produce what is known as " sponge cloth." The silk noils can also be used for padding quilts and bedding suited for cold climates. Probably the most important use of these noils are for military purposes. These noils are of considerable importance for packing shells and it is the one material greatly recommended for the purpose.

From spun silk yarn can be made practically all the frabics that are made from silk, viz., sarees, taffetas, georgettes, shirtings, hosiery, coatings, etc.

The mill has as its expert Mr. H. Pulman from England.

Resources of Manchoukuo

Since the State of Manchoukuo was established in 1932, the exploitation of the mineral and agricultural resources of this vast territory has been undertaken on a great scale ; and the purpose of a monograph issued by the Japan Economic Federation in Tokyo is to give an accurate picture in English of present-day industrial conditions in that country. The work is the fruit of the Research Division of the Manchuria Industrial Development Corporation's collaboration with the Federation.

Zinc and lead mines are found in the districts of Chingchentzu and Yangchiachangtzu, worked by subsidiaries of the Manchuria Mining Company, and at Tienpaoshan, the aggregate of the deposits being put at over 15 million metric tons. Mines of magnesite ores, with deposits totalling some 13,680 million metric tons, are distributed round Tashihichiao and Haicheng, while the deposits of aluminium shale, estimated at 120 million metric tons, occur in various places. In view of the scarcity of petroleum in both Manchoukuo and Japan, the utilization of oil shale is of paramount importance, and is already being carried out on a commercial scale successfully at Fushun, where most of the 7,600 million tons is located, the annual production surpassing the output of natural petroleum in Japan. The report points out that the iron ore deposits, estimated at ten million tons, at Chitaokou, contain about five per cent of manganese.

Lead, zinc, silver and copper ores are usually deposited jointly in the same mines, and are found mostly in South Manchuria. The Manpao mine at Tatientzu of Antu-hsien, in Chientao Province, is an important source of antimony, a mineral greatly valued in the Japanese market. It is claimed that the Yangchiachangtzu mine, belonging to the Manchuria Lead Company in Chinchou Province, may be safely said to be one of the most important districts in the world for ores of lead, zinc, iron sulphide and molybdenum, the aggregate amount of the deposits being estimated at ten million tons. The results of experimental mining during the last six years are said to be excellent, and a concentrating plant with a daily capacity of 500 metric tons has already been built, while a second plan is being formulated. The zinc ores separated are sent to Hulutao, where a refinery is under construction. Aluminium shale occurs in several provinces, the total Manchoukuoan deposits being believed to amount to at least 120 million metric tons. To make use of these ores the Manchuria Light Metals Company was formed at the end of 1936 as a semi-governmental juridical body, two years later being put under the control of the corporation. The main products of the company are aluminium, bleaching powder, hydrochloric acid and silicic iron.

In a belt of land with an area approximately 60 square kilometers lies a vast district of magnesite estimated to amount to 13,600 million tons, as previously mentioned, and it is suggested that this is perhaps unparalleled both in quantity and quality, as it is a pure carbonate containing but little iron, alumina, and lime.

Power from the Perak River

DURING the past two years the Perak River Hydro-Electric Power Company has embarked on a scheme of expansion, chiefly with a view to meeting the increasing demand in its area, and making full use of the network already existing in the Kinta Valley, also with a view to providing adequate standby plant in the steam stations. The new plant was designed by and installed under the supervision of Messrs. Balfour, Beatty & Co., Ltd., of 66 Queen Street, London, E.C.4.

Generally speaking these activities have resulted in Malim Nawar Steam Station having the capacity of the plant installed raised from 18,000 kw. to 30,000 kw. Also, the Batu Gajah Steam Station plant capacity being raised from 9,000 kw. to 21,000 kw., added boiler capacity in both stations being provided so as to supply the extra steam required and provide standby boiler capacity. The total capacity installed now is 51,000 kilowatts.

An extension of the main system from the Kinta Valley into the Batang Padang Valley has also been undertaken so as to make supply available to the large mining area south of Kinta where gold mining as well as tin mining gives an alternative activity in the event of low quota periods of tin production.

The outbreak of war resulted in immediate and urgent demands for power to meet the increased tin quotas available to mines, and the policy of increasing the generating capacity of the company enabled the bulk of these demands to be met.

Probably the greatest advantage of the use of electric power in gravel pump mining is mobility of mining equipment, and this facility is, of course, at its maximum value when a new mine is being opened up, or a mine temporarily shut down is re-opened and it is desired to bring it into a state of full production within the quickest possible time.

It is no over-statement to say that every electric motor which can be made available under such conditions is in urgent request and the work thrown on a power company organization in dealing with these rapid increases of demand needs the good-humored co-operation of all concerned, both miners and power company officials.

The transportation and installation under rush conditions of large numbers of electric motors, sub-station equipment and transformers, the motors varying in horse-power from 40 to 300 over roads which in slump times have probably been allowed to get into a very poor state of repair, is a task which has really to be seen to be appreciated.

Meeting the requirements of a mining district, where practically all the work, whether dredging or gravel pumping, continually alters the whole surface of the surrounding country, requires a very flexible organization and a willingness to provide service, which is quite different from the normal activities of a power company. There is no question of permanence as in most of those features of power distribution most valued by power company engineers. The lines of the distribution system are continually altering, even the main 66,000-volt power lines are liable to deviation to meet mining requirements, so that there is really little time to consolidate.

In spite of all these factors the company can claim to have maintained a satisfactory service to the mining community not only from the aspect of continuity of supply, but also in arranging to make that supply available, nearly always at short notice, at those points at which it will most facilitate the mining operations necessary to a high rate of production of tin.

The outbreak of war might have rendered the position of the company extremely difficult in the matter of availability of equipment both for transmission lines and for actual plant requirements in the mines and the distribution system; thanks, however, to the large stocks of all necessary equipment and materials which were carried by the company, little inconvenience resulted.

To add to other difficulties an extraordinary drought prevailed during the first few months of 1940 in the catchment area of the Perak River, considerably decreasing the amount of power available from the company's hydro-electric station at Chenderoh. Here the immense value to the miners of the recent large steam station extensions has become obvious. In fact, some measure of the importance of these extensions can be gauged by the fact that it is not the steaming capacity of the power company's installations which has been in question at any time, but whether coal supplies could be made available primarily from local sources, or by shipment from abroad, to meet the urgent demands which were being made by miners upon the steam capacity so recently installed by the directors. It is to be hoped that the value of these services, rendered by the company's forward policy of providing adequate facilities to meet fluctuating demand, will be recognized adequately by all those interested in the efficient production of tin in Malaya.

Wartime in Beautiful Hangchow

(Continued from page 200)

The bus between the ferry and Sihsing is always heavily loaded for it is quicker than walking and cheap for 40 sen one way fare. Four armed Japanese soldiers are detailed to convoy duty with each bus. The precaution is not unjustified, for a few weeks ago on a line not far from this one, three terrorists sitting in the back of the car produced pistols, shot the soldiers in the back, robbed the travellers and fled into the hills. The guards, therefore, not only protect the bus which is Japanese-owned and Chinese operated, but also the peasant passengers.

From the hilltop, this is just a peaceful countryside that stretches underfoot so green and prosperous-looking. But the sentry, silhouetted at his post above the barbed wire, is grim reminder that the country is at war, and the individuals in the rude huts scattered below are playing key rôles in total war in which food itself is a vital weapon. No less than in the choppy seas off the European coast, a blockade is being waged in the sweeping Chinese hills and broad valleys, for rice like bread or oil or guns, on this or any other front, will help to determine the outcome of a great struggle.

SHANGHAI
POWER COMPANY

To our Consumers:

In view of the present shortage in the supply of fuel for our Riverside generating station it is urgently requested that you reduce your use of electricity as much as possible.

Every effort is being made to obtain additional fuel and you will be informed the instant that any relief is secured. Until such time it is essential that you conserve the use of electricity.

L. M. Pharis,
Vice-President and General Manager